



CANYON FERRY

Draft Management Plan & Environmental Assessment

prepared for

Montana

Department of Fish, Wildlife & Parks

U.S. Department of Interior,

Bureau of Reclamation

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DEDICATION

The Canyon Ferry Resource Management Plan is dedicated to the memory of Ray Doig whose fine work and stewardship of natural resources around Canyon Ferry lives on.

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PREFACE

Many voices shaped the future view of Canyon Ferry. Through countless public meetings, work sessions, and staff meetings, an image of Canyon Ferry's next decade took form.

The area's vast shoreline, some of which is developed and some of which remains quiet from day to day, supports enough diversity to offer a wide spectrum of use. While Canyon Ferry will offer neither a wilderness experience nor urbanized camping development, it will provide a variety of opportunities for people to experience something in between the extremes; from minimally-developed sites to campsites with many amenities. Day use and group use sites will be provided to accommodate a growing number of users in the future, and all will recognize the area's primary draw -- the water. Cabin site lease areas will continue to exist but will benefit from more consistent management.

Those using Canyon Ferry wanted more opportunities to enjoy the area's wildlife -- from the vantage point of trails, duck blinds, interpretive programs, and visitor information centers. Eagle-viewing will be a highlight as long as the workings of nature bring the birds our way. While the plan provides for these activities, it also recognizes the need for protection of the resources visitors have come to enjoy. Resource protection is embodied in the policies and programs proposed.

Fishing will continue to dominate Canyon Ferry's attractiveness. Anglers, as the area's primary users, showed steadfast interest in improving the fishery and making this a priority for the plan. While the fishery is integral to visitation in the future, area users and surrounding communities promoted the diversification of activities to attract people in more sustainable numbers, and at different seasons.

Area users will be taken better care of in the future by improved signing, access, information, enforcement, staffing, and site improvement. More subtly, the area's physical surroundings will be better cared for by campsite designation, fencing, signing, and landscaping.

Opportunities for partnerships emerged from the planning process: with the community of Townsend for improving visitation and building a visitor center; with cabin site lessees for improving management and weed control; and with concessionaires to clarify and consistently enforce regulations, and for providing the best mix of services to area visitors.

Canyon Ferry is not slated to go through dramatic physical changes in the next ten years. Rather, its managers will make better use of existing resources and enhance features that heretofore have been neglected or gone unnoticed. The area's contribution as a wildlife, recreation, and economic resource for this region will receive the recognition it deserves.

CHAPTER 1 INTRODUCTION**1.1 PURPOSE AND SCOPE**

This plan guides all recreational, wildlife, fisheries, and management activities at Canyon Ferry State Park, located in Lewis and Clark and Broadwater counties, Montana (see Figure 1). It establishes goals and objectives for that management, and provides a history and baseline for measuring the progress and success of suggested management. The plan applies to Canyon Ferry Reservoir and surrounding Reclamation lands. These lands are now managed by the Montana Department of Fish, Wildlife and Parks (DFWP).¹ (See Figure 2).

Once adopted by the U.S. Department of Interior, Bureau of Reclamation (Reclamation) and the Montana Fish, Wildlife and Parks Commission, the plan will be referenced in a memorandum of understanding between the agencies and used as the management framework for the reservoir and surrounding lands. Future management may also include the Bureau of Land Management. Any or all of these three agencies may be involved in the future management of Canyon Ferry.

1.1.1 Authority

Reclamation has statutory authority to manage for recreation, fish, and wildlife resources under Public Law 89-72. The agency's philosophy is to manage its projects in partnership with state or local authorities whenever possible. At Canyon Ferry, Reclamation has vested recreation, fish, and wildlife management responsibilities in DFWP through a memorandum of understanding (see Memorandum of Understanding).

1.2 LOCATION AND DESCRIPTION OF CANYON FERRY STATE PARK

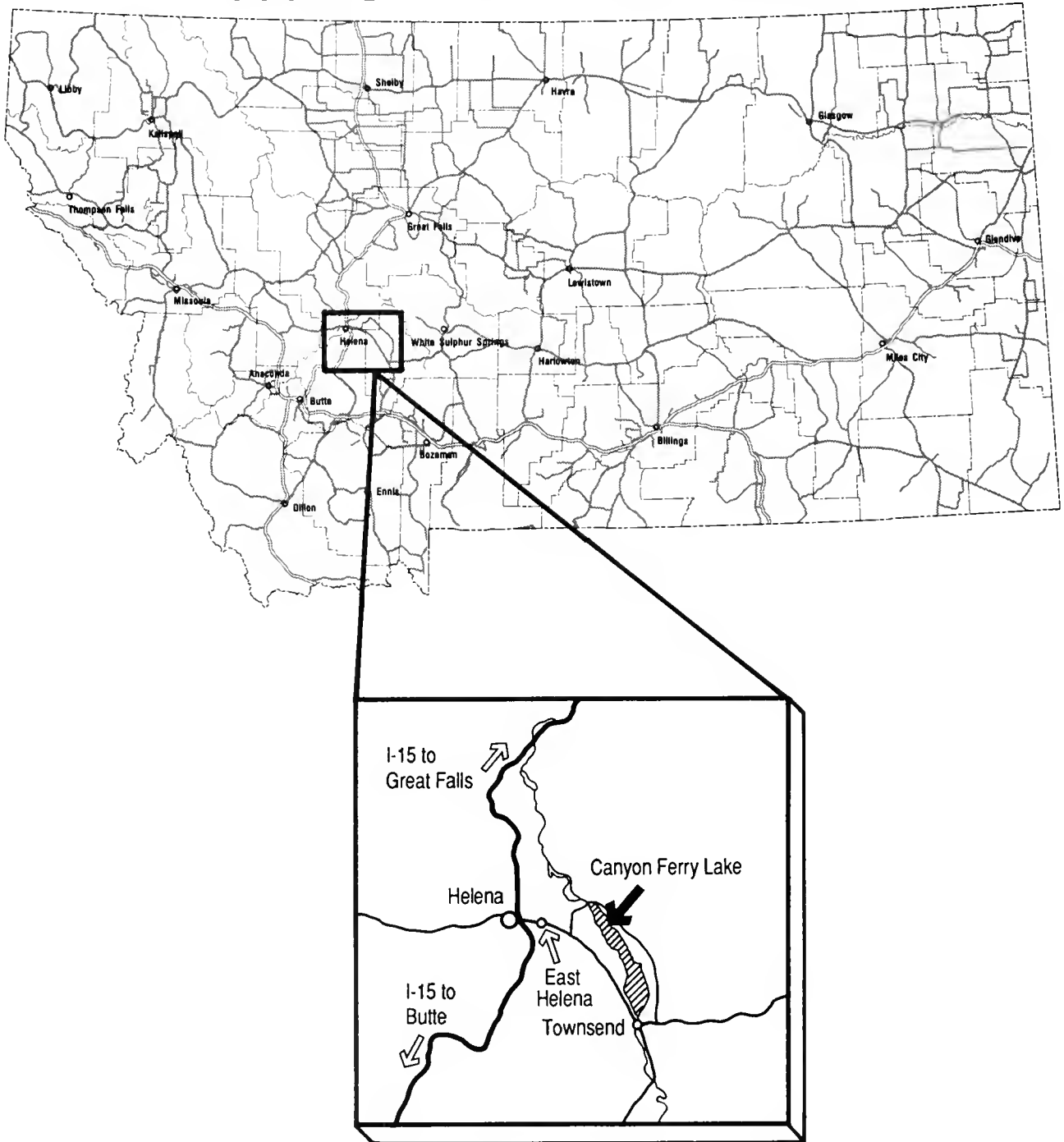
The primary study area covered in this plan includes all lands surrounding Canyon Ferry Reservoir that are under the administration of the U.S. Department of the Interior, Bureau of Reclamation, the use of the water within the reservoir, and of streams tributary to it. In addition, Reclamation lands at the base of the dam are included. Consideration is also given to land adjoining Reclamation property if its current or known future use will significantly affect, or be affected by, policies and management proposals in this plan.

1.2.1 Highlights of the Study Area

The study area encompasses about 9,360 acres of land (at lake elevation 3,797') along the 76-mile perimeter of Canyon Ferry Lake. The lake itself covers about 35,200 acres, extending upstream from Canyon Ferry Dam about 25 miles to a point where the Missouri River enters the lake at its southern end. Several side-streams feed the lake and some of these support trout spawning (see Water Resources and Quality and Fisheries).

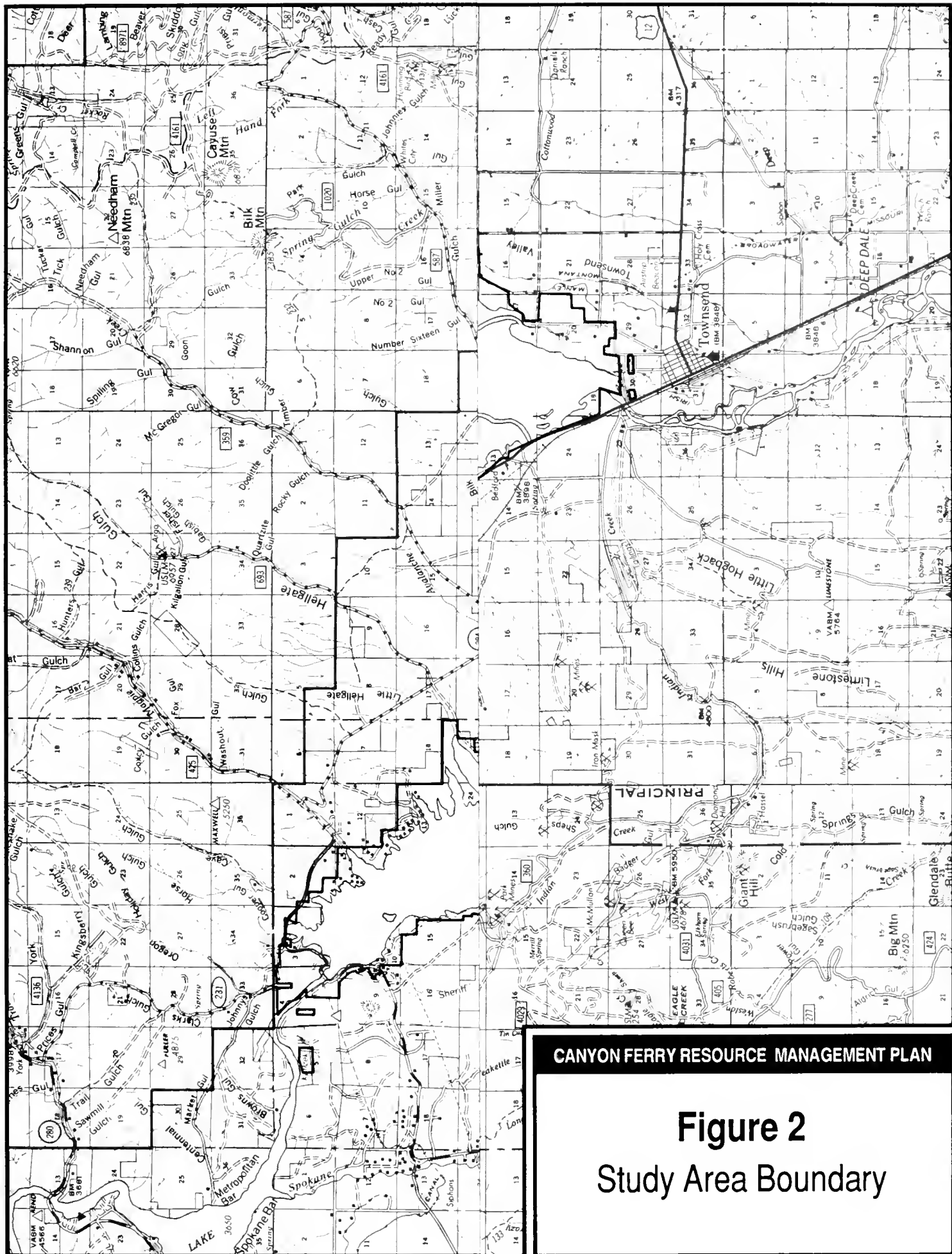
¹The present Memorandum of Understanding between Reclamation and DFWP excludes certain areas from DFWP management such as the dam, power station, and Canyon Ferry Village. Canyon Ferry Village is addressed in this plan since its ultimate management is under reconsideration. Although the ballfield and golf course near Townsend are on Reclamation land, they are not within the study area.

MONTANA



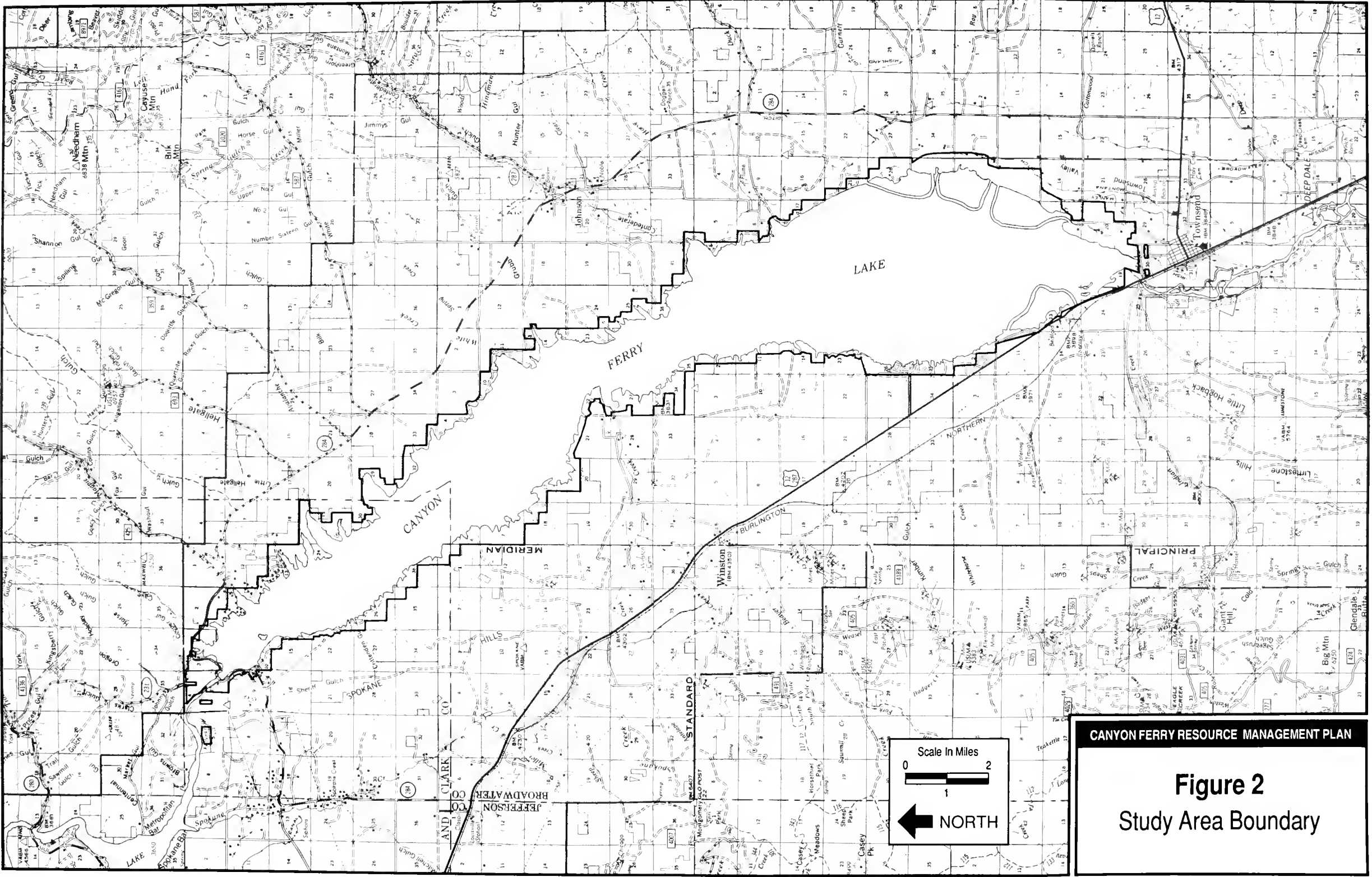
CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 1
Vicinity Map



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 2
Study Area Boundary



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 2
Study Area Boundary

Vegetation in the reservoir area ranges from willow, cottonwood, and other bottomland trees along the upper shore of the lake, to bunchgrass, juniper and sage on the higher, gently sloping hills. Evergreen and shrubby vegetation grow on the steep, rocky lands at the north end of the lake and on the Helena National Forest lands rising above the lake to the east and west. The valley in which the reservoir is located widens from about 1,000 feet at the dam to about eight miles near Townsend (see Vegetation).

The reservoir supports a wide variety of aquatic life, including rainbow and brown trout, and yellow perch. Historically, these game fish have attracted anglers in sufficient numbers to make Canyon Ferry one of the most popular fisheries in Montana (see Fisheries). Waterfowl populations, whose habitat has been greatly improved by a 5000-acre dust abatement and wildlife management area, are evident year-round. The variety includes geese, ducks, pelicans, cormorants, and a host of other resident and migratory birds (see Wildlife).

Wildlife includes white-tailed and mule deer, antelope, and even occasional elk and moose. Hunters are attracted to the study area by these animals and game birds such as grouse, ducks, geese, and pheasants. Nongame species include smaller animals such as song-birds, beavers, mink, rabbits and osprey. Bald eagles have recently increased their visitation to the area, particularly in the fall when they feed on spawning Kokanee salmon below the dam near Riverside Campground.

As of 1990, the study area supported 24 public recreation sites including 12 overnight campgrounds, some of which can be reserved for group use; nine day-use areas; one site reserved exclusively for group use; and two sites accessible only by boat (see Recreation). In addition, there are three private concessions; Yacht Basin and Kim's Marina at the north end of the lake, and Goose Bay Marina located along the lake's east shore.

Lands along the shoreline are also used for a variety of other purposes, including groups of cabin sites along the northeast and -west shores, agricultural uses -- both cropping and grazing, and dispersed recreation and hunting (see Land Use and Ownership). The reservoir is used for fishing, boating, sail-boarding, water-skiing, swimming, and a myriad of other water-related activities. Water from the reservoir also serves as a municipal water source for Helena, an irrigation source for the Helena Valley, and as a source of power generation at Canyon Ferry Dam (see Management and Administration).

The study area lies in the jurisdiction of two counties; Lewis and Clark to the north and Broadwater to the south (see Figure 2). The nearest population centers are Townsend, about three miles south, and Helena, about 15 miles northwest. The reservoir serves as a statewide recreational facility but the majority of visitors come from a region within a 120-mile radius, including the towns of Helena, Great Falls, Butte, Missoula, and Bozeman (see Recreation and Socioeconomics).

Vegetation in the reservoir area ranges from willow, cottonwood, and other bottomland trees along the upper shore of the lake, to bunchgrass, juniper and sage on the higher, gently sloping hills. Evergreen and shrubby vegetation grow on the steep, rocky lands at the north end of the lake and on the Helena National Forest lands rising above the lake to the east and west. The valley in which the reservoir is located widens from about 1,000 feet at the dam to about eight miles near Townsend (see Vegetation).

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1.3 MANAGEMENT AND ADMINISTRATION

1.3.1 Administrative Structure

Bureau of Reclamation

The U.S. Department of Interior, Bureau of Reclamation (Reclamation) was created by Congress in 1902 to stimulate settlement and economic development in the arid west through irrigation.

In recent years, Reclamation's role as the developer of large, federally-financed agricultural and power projects has declined. Today, Reclamation is transforming from a major construction agency to an organization based primarily on resource management. Objectives identified in Reclamation's Strategic Plan include:

- 1) Managing and developing resources
- 2) Protecting the environment
- 3) Safeguarding the investment
- 4) Building partnerships
- 5) Fostering quality management

In the area of land resources, Reclamation's goal is to provide balanced management to meet multiple-use needs for the hundreds of thousands of acres of public lands associated with its facilities. Included in this goal is the objective to manage project operations, lands and water surface areas to enhance recreation, fish and wildlife habitat, and to protect the environment.

Administrative structure within Reclamation for land management is as follows: the natural resource specialist, stationed at Canyon Ferry, reports to personnel in the Montana Projects Office in Billings; the supervisory natural resource specialist, supervisory civil engineer, and project manager, respectively.

Dam and Reservoir Operations. Reclamation completed construction of Canyon Ferry Dam in 1954. The reservoir is operated to provide flood control in cooperation with the Army Corps of Engineers; a water supply for power generation in coordination with Montana Power Company (MPC), irrigation, municipal and industrial uses; and to enhance recreation, fish, and wildlife benefits. Reclamation also works with DFWP so that it may coordinate its own management strategies with those for fish, wildlife, and recreation.

Canyon Ferry Dam is 225 feet high (172 feet above streambed), 1,000 feet long at the crest, and 173 feet wide at its base. The reservoir has a storage capacity of 2,051,519 acre-feet. There are four methods of releasing water from the reservoir; through the spillway, the river outlets, the turbines, and the Helena Valley Pumping Plant. The average discharge from the reservoir is 5,400 cubic feet per second (cfs). December-February discharges average 5,100 cfs, and June-August discharges average 6,400 cfs. Actual discharges are primarily determined by inflows and reservoir content. When the reservoir is at elevation 3,800, the spillway has a maximum

discharge capacity of 150,000 cfs, controlled by four radial gates. The dam has four river outlets that have a maximum combined discharge capacity of 9,400 cfs.

A 50,000-kilowatt powerplant is located on the right bank of the river adjacent to the spillway basin at the toe of the dam. The powerplant houses three turbines that have a total discharge capacity of 6,400 cfs. During years when no spills are required to control the fill of Canyon Ferry Lake, about 93 percent of the water leaving the dam is released through the turbines, producing an average of 405 million kilowatt hours of energy annually. The remainder of the water is released for irrigation needs of the Helena Valley Irrigation District. Power from Canyon Ferry is transmitted by Montana Power Company (MPC) to the Western Area Power Administration grid which then markets the power.

Irrigation water is being supplied to about 15,000 acres on the Helena Valley Unit. A pumping plant located below the dam has two pumps powered by hydraulic turbines. When operating at capacity, the pumps deliver about 350 cfs to the Helena Valley Canal, and the turbines discharge an additional 350 cfs back to the river. Actual flow in the canal varies with irrigation demand.

Stored water for irrigation is also supplied to upstream irrigators by exchange contract. Under such a contract, the junior priority upstream irrigator can divert natural flows as necessary to meet irrigation needs. Stored water is then released from the reservoir to supply the senior natural flow water rights of MPC downstream from Canyon Ferry. Since 1989, Reclamation has imposed a moratorium on the further issuance of water service exchange contracts upstream of Canyon Ferry. Temporary (one year) water service contracts are issued below Canyon Ferry on a case-by-case basis. The moratorium will remain in force pending the outcome of a water quality study that is determining the impacts that additional depletions would have on arsenic concentrations.

Water users pay a proportionate share of the capital and operations and maintenance costs of Canyon Ferry. There is adequate water storage for additional private and federal irrigation development but no projects are planned.

The City of Helena receives a portion of its municipal water supply from Canyon Ferry. Water is delivered via a canal and tunnel system to the Helena Valley regulating reservoir and is then piped from there to the city's treatment plant. The service contract with the Reclamation entitles the city to 5,680 acre-feet, but annual use by the city depends on its water availability from other sources.

Canyon Ferry Dam stabilizes the flow of the Missouri. Snowpack in the 15,760 square-mile drainage area above the reservoir is measured each winter. Based on monthly water supply forecasts, releases are scheduled from the dam in amounts sufficient to prevent flooding, while assuring an adequate storage supply for irrigation, power generation, recreation, fisheries, and wildlife needs later in the season.

The top three feet of the reservoir's water storage between elevations 3,797-3,800 (99,460 acre-feet) is allocated exclusively to flood control.² In addition, the next 27 feet of storage space

²Flood Control Capacity is the reservoir capacity assigned for the sole purpose of regulating flood inflows to reduce downstream flood damage.

between 3,797-3,770 elevation (795,135 acre-feet) is joint-use³ space available for both flood control and conservation purposes. Between elevation 3,728-3,770 (711,462 acre-feet) is active conservation.⁴ Between elevation 3,635.5-3,728 (445,462 acre-feet) is dead and inactive.⁵

Canyon Ferry Lake and environs provide excellent habitat for a variety of both fish and wildlife. The reservoir is one of the most heavily fished bodies of water in Montana. Wildlife and fisheries aspects of the study area are discussed in greater detail in the Wildlife and Fisheries sections of this plan. Since 1957, fish and wildlife management has been conducted by the DFWP.

At the end of each water year, Reclamation prepares an annual report summarizing climatic and hydrologic conditions and events of the past year that are principal factors governing the pattern of reservoir operations. Annual operating plans are also prepared for the new water year. Except for special operations, the reservoir is generally managed under the following criteria and limitations:

- 1) The top three feet between elevations 3,797 and 3,800 are used exclusively for downstream flood control. When storage rises into this pool, operation of the reservoir is directed by the Army Corps of Engineers. This storage is generally evacuated as fast as downstream conditions permit.

- 2) As soon as storage has peaked, usually in June or July, power releases are adjusted so that the pool will be drawn to near elevation 3,783 (1,510,000 acre-feet) by the following March 1. Each month, inflows to Canyon Ferry are re-evaluated and releases are adjusted accordingly. Releases to meet desired reservoir elevations are limited to powerplant capacity. Generally, water is not spilled to provide this drawdown.

- 3) Most of the stored water that will be released from Hebgen Lake is spilled in October and November. Storage of this water in Canyon Ferry may cause the reservoir to rise slightly in these months. However, MPC will try to limit the Hebgen drawdown during these months in an effort to maintain Canyon Ferry pool below elevation 3,794 after December 1, 1990. Storage

³Joint-use space is a portion of the total conservation capacity assigned to flood control purposes during certain periods of the year and to conservation during other periods of the year. Normally these are established by a flood control agreement between Reclamation and the Corps of Engineers, whereby Reclamation agrees to keep the joint-use pool available to control high runoff.

⁴Active Conservation is the reservoir capacity assigned to regulate reservoir inflows for irrigation, power, municipal and industrial use, fish, and wildlife, navigation, recreation, water quality, and other purposes. It does not include exclusive flood control or joint-use capacity.

⁵Inactive is the reservoir capacity, exclusive of and above the dead capacity, from which stored water is normally not available due to physical restrictions or operating agreements. Usually, inactive capacity is established for two purposes: (1) to provide minimum operating head on a powerplants, and/or (2) to provide minimum head on canal or river outlets to maintain a desired discharge. Dead capacity is the reservoir capacity from which stored water cannot be evacuated by gravity.

below elevation 3,794 prior to winter freezeup is desired to prevent ice-jam problems at the head of the lake.

4) Beginning near the first of January, and at least monthly thereafter through June, water supply forecasts are prepared from snow cover and precipitation measurements to estimate the amount of spring runoff expected to flow into Canyon Ferry. As these forecasts become available, operational mitigations are sometimes required. Releases are set based on the most probable spring inflow forecast to allow the reservoir to fill to elevation 3,797 (1,952,000 acre-feet) near the end of June.

5) After April 1, if forecasts indicate that releases in excess of powerplant capacity must be made, the amount of spill is based on more refined inflow estimates. Releases are limited to 15,000 cfs of full downstream channel capacity as long as space is available.

6) Depending on when the spring runoff starts, the release of water, based on inflow forecasts, may draw the pool as low as elevation 3,770 (1,157,000 acre-feet). In a series of dry years the pool may be drawn as low as elevation 3,728 (445,000) to meet firm power-generation requirements and satisfy MPC's prior rights. If storage is drawn below elevation 3,728, the powerplant becomes inoperable.

In addition, input on reservoir operations is provided by recommendations from the Upper Missouri Advisory Council, a working group that is concerned with the effect that reservoir operation has on fish and wildlife resources, both within and below the reservoir. This group is coordinated by the DFWP and includes representation from the Department, anglers, marina operators, the Helena Valley Irrigation District, the Canyon Ferry Recreation Association (CFRA), Reclamation, MPC, and outfitters. The Council meets to discuss streamflow, reservoir levels, and fishery and wildlife management. The group monitors hydrologic and climatic conditions and makes recommendations on dam releases, particularly during spring and summer months when storage for power generation and irrigation may substantially affect downstream releases (see Chapter 3, Management, for more discussion).

Department of Fish, Wildlife and Parks

Reclamation's policy is to give preference to state and local management agencies where second-party management is required. Consequently, Reclamation signed an agreement with the State of Montana for such management in 1957. Two separate memoranda were written; one with the Fish and Game Commission and the other with the Highway Commission, the agency then responsible for parks management. These memoranda set forth three categories of lands: those to be used for the primary purpose of dam and reservoir operation, and to remain under the jurisdiction of the Reclamation; those to be used primarily for recreation purposes and to be managed by the Highway Commission; and those to be used primarily for wildlife purposes, to be managed by the Montana Fish and Game Commission. In 1965, the state legislature transferred the function of parks administration to the Department of Fish and Game. Since that time, recreation, wildlife, and fisheries management have been conducted by a single agency (DFWP). (For further information, see Appendix A, Management History.)

Through 1979, the Wildlife Division actively managed all lands assigned to it through the 1957 MOU. Fencing, patrol of trespass, curtailment of unauthorized agricultural and off-road use, game management, and operation of the WMA were conducted.

Subsequent to a change in personnel in 1979, management focus shifted to the WMA and other lands assigned to the Wildlife Division were less actively managed. In 1989, when the DFWP initiated entrance fees, the Parks Division informally assumed management of all lands around Canyon Ferry with the exception of the WMA. At present, no formal change has been made to the MOU to reflect this.

DFWP, under the direction of the Fish, Wildlife and Parks Commission, is legally responsible for managing the state's fish, wildlife, and recreational resources. Specific laws address the protection, preservation, and propagation of game species; seasons and regulations for fishing and hunting; protection of habitat, and preservation of nongame animals. Two sections of the law address federal funding authorizations for fisheries (Dingell-Johnson Act) and wildlife (Pittman-Robertson Conservation Act). Department responsibilities for protection of stream habitat are set forth in the Stream Preservation Act and the Natural Streambed and Land Preservation Act.

Historically, management for Canyon Ferry has been split between two management regions within the Department, regions 3 and 4. This caused administrative problems not only because of the separate regions but because four divisions within the Department were also involved: parks, enforcement, fish, and wildlife. In 1989, Canyon Ferry was included in a newly-formed Region 8. Administration, and coordination with Reclamation, is handled through the Region 8 supervisor.

The chain of command for Canyon Ferry management is as follows: the area parks manager supervises staff for day-to-day operation of the area. The park manager is directly responsible to the Region 8 parks manager who in turn is responsible to the Region 8 supervisor. All fisheries and wildlife activities are coordinated through the Region 8 supervisor. The Region 8 supervisor is then responsible to the deputy director for field operations.

Parks Division. The Parks Division has the responsibility to acquire, plan, and develop outdoor recreational resources in the state and to conserve archaeological, scientific and recreational resources of the state for their use and enjoyment. This is the role that the Parks Division plays on lands assigned to its administration at Canyon Ferry.

Enforcement Division. The Enforcement Division has the obligation to protect park users and protect fish and wildlife resources and their habitat from willful or negligent destruction. This is done by attaining an acceptable level of compliance to regulations and laws relating to fish, wildlife, parks, recreation and certain hunting, boating and snowmobile safety codes.

Wildlife Division. To meet the ever-increasing demands placed on wildlife resources, the Wildlife Division has the obligation to provide the optimum amount of recreation without endangering those resources. To fulfill this obligation, wildlife habitat must be managed to its optimum potential, both in quality and quantity.

Fisheries Division. The Fisheries Division has the responsibility of providing effective management of Montana's aquatic resources in order to perpetuate desirable natural habitat and animal life, and to preserve and increase fishing opportunities.

Other Agencies

The U.S. Bureau of Land Management (BLM) and U.S. Forest Service (USFS) administer land adjacent to, and near the study area. These agencies are responsible for multiple-use of public lands, and for a wide variety of actions including revenue generation from public lands, resource and environmental protection, and recreational opportunity and enhancement for a variety of users.

1.3.2 Memorandum of Understanding

Memoranda of Understanding (MOUs) were signed between Reclamation and the state on February 21, 1957 for recreation management, and on March 19, 1957 for wildlife management. Both of these were 30-year term agreements, expiring in 1987. Extensions were written for the MOUs in 1987, 1988, and finally in 1989 for a period of four years. About 20 supplements and amendments have also been drafted by the two agencies, primarily addressing cost-share arrangements and land boundary adjustments.

Portions of the original MOUs have significant bearing on the potential management direction to be considered in this plan. These sections will be discussed here for a framework when considering management activities. They must either be adhered to or amended in a future MOU.

Reclamation reserved the right to use any portion of the reservoir area that might be needed for project purposes in the future. It reserved the right to fluctuate water levels as might be necessary to meet use demand and other project purposes, and the right to explore and develop minerals on study area lands.

All licenses, permits and contracts that the DFWP signed with other parties were to be limited to 10-year terms. In the event that the DFWP relinquished management, Reclamation reserved the right to terminate all previous DFWP legal agreements within 90 days of the transfer, and by giving 30-day written notice to the affected party.

DFWP is empowered, through the MOU, to make and enforce rules and regulations for the area to protect public health and safety, and for preservation of law and order.

Revenues generated by the project lands were to be used only for the administration, development, and maintenance of the area. Improvements constructed solely at the expense of DFWP were to remain DFWP property but all other improvements were to revert to Reclamation if a transfer of management occurred. Best management practices were to be required in grazing leases and in all uses of project lands. Provisions were made for termination of the management arrangement by either party.

1.3.3 Previous Management Plans

Both Reclamation and DFWP have prepared previous management plans for the study area; Reservoir Management Plan: Canyon Ferry Reservoir, Montana, 1958 and Canyon Ferry Management Plan and Environmental Impact Statement, 1976, respectively. Although these documents technically stand as the current management framework for the study area, they are outdated. Recognition of this has provided major impetus for the preparation of this plan.

The Reclamation management plan is actually a compendium of agreements, preliminary facilities plans, leases, and rules and regulations governing the use of the study area. It is interesting from the perspective that its preparers were having to visualize management and recreation potential in an area that had only bare hillsides, some of which still suffered from the effects of dam construction. At the time (1958), the area was projected to serve 25,000 visitors annually based on a 50-mile radius region with a population of 40,000. Recreation planning was very general in nature, pertaining mostly to outlines of potential recreation sites and facilities.

The 1976 management plan prepared by DFWP examined both the physical and human environment at Canyon Ferry and prescribed management recommendations for the area. The document also included an environmental evaluation of the management plan.

Management framework for the recommendations was based on the desirability of recreation activities, the spacing of the participants in an activity, the tolerance of the environment to withstand use, and the compatibility of recreation activities to one another.

Resource and land use inventories were compiled along with use data. A recreation opportunities inventory compared the physical characteristics of the existing recreation settings with varied types of recreation preferences. Factors such as the accessibility, remoteness, visual resource characteristics, attractive features, and visitation capacity elements were taken into consideration. What resulted from this analysis was a physical development program including a host of improvements, placement of facilities in previously undeveloped areas, and a major shift in use on the northwest shore from combined camping and day-use to day-use only.

In addition, policies were set forth, committing to a long-term maintenance and improvement program for area roads, the continuance of cabin site leasing, curtailment of concession expansion in the project area if it could be provided equally well on private land, and to long-range plans for the game management area including the establishment of desired vegetation communities. Most of the intended management recommendations have been carried out since the plan was written.

1.3.4 Policies Affecting Management

Current agency policies are included here because they offer the existing management framework for the park. Many of these policies are recognized as needing re-examination or change. Reclamation policy for the area remains in effect and needs to be coordinated with the managing agency. DFWP and Reclamation recognize that differences in on-the-ground and written policy may exist and need to be reconciled; that is part of the purpose of this document. (See Chapter 4, Proposed Plan.)

Reclamation Policies

Reclamation has drafted a policy manual that contains the general policy direction for Canyon Ferry and other federal reclamation facilities. The policies that affect Canyon Ferry management are included here.

Outgrants. Outgrants are all rights-of-use instruments such as easements, leases, licenses, permits, and other land use authorization documents issued by Reclamation. Outgrants are to be issued only when they will not interfere with reclamation purposes. They are to be temporary in nature, and contain restrictive language that protects present and future federal land interests.

A portion of the outgrant policy states that, "New outgrants for long- or short-term exclusive private or semiprivate uses of Reclamation lands for purposes such as cabins, homes, condominiums, townhouses, clubs, organized camps, material storage, miscellaneous buildings, commercial businesses not associated with public or authorized project uses, boat docks, waterfront recreation facilities, landscaping, patios, decks, porches, and other nonessential private facilities shall not be issued. Where outgrants for such purposes already exist, they shall be phased out when it is determined that a beneficial public need for the site(s) exists. Private facilities installed as part of a licensed marina or concession operation that provide benefits to the general public do not fall under this restriction. Exceptions may be granted on a case-by-case basis only where exclusive use would be in the best interest of the United States, and with the approval of the Commissioner..." This policy also provides guidance for additional topics that are to be covered within individual outgrants. It is addressed in Chapter 4 Proposed Plan.

Acquisition of Reclamation Lands. The basis for both acquisition and retention of title to all land and land-rights by Reclamation is the authorized project purpose and/or related general laws. The original agency purposes of irrigation, power, and navigation were supplemented later with fish and wildlife conservation, and recreation when these latter purposes became pressing national issues. To accommodate these added public purposes, Congress, in the 1950s, recommended a joint acquisition policy for Reclamation and the Corps of Engineers, published in 43 C.F.R. 8. Reclamation has closely followed the Joint Policy since that time. (This circular is on file at the Reclamation office for further information.)

Canyon Ferry lands were obtained by either acquiring fee title to the land from private individual(s) or entities, or withdrawn from public domain by executive or secretarial order under a "first form" withdrawal, reserving the lands in federal ownership for the construction and maintenance of irrigation works.

A majority of lands for the Canyon Ferry Project were acquired under the authority of the Flood Control Act of December 22, 1944, Public Law 534, and were acquired to support the original project purposes of irrigation, power, and navigation. The remainder of lands were withdrawn by executive or secretarial order under a "first form" withdrawal.

Disposition of Reclamation Lands. Pursuant to Section 204 of the Federal Land Policy and Management Act of October 21, 1976, Reclamation must review all of its withdrawn lands to determine if they are needed for project purposes. Lands not needed for project purposes must be returned to the public domain for administration by the Bureau of Land Management (BLM).

In the case of acquired lands, Reclamation must make a determination that the acquired lands are no longer needed for project purposes and are excess lands. These lands are reported as excess to the General Services Administration (GSA) for disposal. GSA offers the lands for sale first to other federal, state, or local public entities. If these entities do not want the lands, they are put up for sale through public auction at established fair market and competitive bidding prices.

Off-road Vehicle Use. Off-road vehicle use policy was formulated to protect the land resource, promote the safety of all users, to minimize conflicts among land users, and to ensure that any permitted use would not result in significant adverse environmental impact or cause irreversible damage to existing ecological balances. Policy states that, "Reclamation lands are closed to off-road vehicle use, except for an area or trail specifically opened to use of off-road vehicles..." Areas permitted for off-road vehicle use are to be evaluated, and the use to be judged compatible with adjacent private and public lands. The policy includes further rules and restrictions for off-road vehicles on permitted lands and is addressed in Chapter 4 Proposed Plan.

Concessions. Reclamation's program of land administration has adopted the following concession management policy:

"Although the administration of certain designated lands that were acquired by the Bureau has been transferred to the [Montana Department of Fish, Wildlife and Parks], the Bureau cannot divest its basic interest in the land. The Bureau's interest must reflect itself in two ways: first to assure that nothing is done which conflicts with the primary purpose of the project, and second, to assure that the land is receiving proper use [by the concession operator] in accordance with sound practices in its land management policies and land management plan."

Aircraft. The operation of aircraft on Reclamation lands is prohibited except on landing areas designated by Reclamation's regional director and approved by the administering agency. Except in extreme emergencies, the air delivery of any person on land or water is prohibited without written permission by the regional director. This provision does not apply to official Reclamation business, emergency or forced landing. However, it would apply to recreational float plane use.

In addition, all designated landing areas shall be marked by posting appropriate signs and landing markers, and will be included on state aeronautical maps used by pilots of private and commercial aircraft. All Federal Aviation Administration and state standards still apply.

Other Policies. Policies also exist for the disposal and use of timber, sand, gravel and other minerals and building materials; resolution of unauthorized use and trespass; and use and management of floodplains.

Department of Fish, Wildlife, and Parks Goals and Policies

In November 1992, DFWP published "Creating a Vision for the Future of Montana's Fish, Wildlife & Parks," a document articulating the department's overall goals for the future. This plan has been prepared in conformance with applicable goals, included below:

"GOAL A: Manage with a focus on ecological systems to reflect the diversity of all wildlife and their habitats, while maintaining our commitment to Montana's hunting and fishing heritage.

Ecological Approach

- Develop programs on appropriate FW&P lands that interpret and explain the inter-relationships among Montana's ecological systems.
- Encourage and promote maintenance of quality habitats and work to improve degraded habitats.
- Ensure that FW&P land transactions consider all ecological aspects of the properties.
- Ensure that any development of FW&P lands minimizes the impacts on the natural environment.
- Develop information and education programs that emphasize: (1) the diversity of Montana's wildlife and their habitats, and (2) how wildlife and their habitats are affected by the world around them.

Commitment to Heritage

- Develop information and education programs that explain and advocate the role of hunters and anglers in wildlife conservation.
- Ensure protection of fish, wildlife and parks resources through state-of-the-art law enforcement.
- Ensure that FW&P programs comply with the Montana Environmental Policy Act (MEPA).
- Maintain and enhance fish and wildlife populations for public use and recreation.

GOAL B: Provide increased opportunities for public enjoyment of Fish, Wildlife and Parks resources, while maintaining our commitment to improve landowner/sportsperson/departments relations.

- Develop new activities and opportunities to enjoy fish, wildlife, recreational, historic and cultural resources.
- Provide adequate access and supply information to ensure appropriate use.
- Develop new approaches to improve landowner/sportsperson relations designed to increase landowner support for public recreation access and wildlife management programs.
- Encourage continued public participation in hunting and balancing the need to provide simple and consistent regulations with the public's desire for diverse hunting opportunities.
- Reduce angler conflicts by creating more angling opportunities through: (1) enhancing aquatic habitat, (2) developing angling opportunities closer to population centers, and (3) providing information which identifies less crowded fishing opportunities.
- Identify new funding sources to support the growing public interest in Montana's Watchable Wildlife program.

GOAL C: Achieve a quality, financially sound state parks system.

- Develop public support necessary to carry out the State Park Futures Committee recommendations.

- Develop management plans for all state parks.
- Provide appropriate support to achieve a quality state parks system. (For example: enhance wildlife management opportunities in selected state parks, and establish appropriate levels of enforcement for parks.)
- Achieve financial stability through a combination of user fees, general taxation and private funds to ensure that Parks remain affordable.
- Give increase emphasis to the management of cultural and historic resources.

GOAL D: Elevate the importance of public education and participation in all program areas to afford citizens the opportunity to better understand, appreciate and make informed decisions about our natural and cultural resources.

- Encourage and aid communication: (1) within FW&P to better understand the needs and expectations of all people interested in Montana's natural and cultural resources, and (2) among constituents who may have conflicting interests in natural resource issues.
- Heighten the public's awareness of Montana's natural and cultural resources by providing more opportunities for the public to participate in hands-on experience.
- Maintain existing education programs and develop new programs to provide opportunities for youth and adults to: (1) learn about fishing and the needs of aquatic life, and (2) to better understand how fisheries and aquatic habitats are managed.
- Cooperate in appropriate education efforts and programs in other agencies and interest groups.

GOAL E: Create a work environment where a diverse workforce can focus on FW&P priorities under healthy, satisfying and caring conditions.

- Provide a non-discriminatory work environment that promotes high morale, professionalism and a diverse and well-qualified workforce.
- Develop a workforce that is informed about FW&P responsibilities and issues."

Existing Policy. Although no formal policies have been developed specifically for Canyon Ferry, portions of the 1976 Management Plan are still in effect, such as day-use restrictions on the west shore. It is the purpose of this plan to formulate appropriate policy.

In 1989, the DFWP appointed a Parks Futures committee approved by Governor Stan Stephens and legislative leaders. The committee's purpose was to prepare an investigative analysis of the status of the State Park System. With extensive public involvement, the committee did so and made findings and recommendations to the Governor, the Fish, Wildlife and Parks Commission, and the 52nd Legislature.

Though for the most part, the committee's report does not specifically address any one park, it does illustrate why planning for parks within the system is so difficult. Since Canyon Ferry is part of a larger park system, any recommendations made for management and funding must be made in light of that larger system. The committee's report pointed out that long-range planning involving park classification and prioritization is lacking both due to funding and staff. Without such planning, the public was found to be opposed to the disposal of any sites pending adequate

citizen review, and in the absence of a State Park System Plan (Montana Department of Fish, Wildlife and Parks 1990b).

Regarding management plans, the Committee recommended that, "...site-specific plans should be developed on a priority basis after the proper mission of each park has been determined through classification in the overall State Park System Plan. Site-specific planning should be done in the context of the park system as a whole. Each park should adopt the standards and the identity of the system. It should include a comprehensive inventory of the park's natural and cultural features so that they can be properly understood, protected, and developed for their educational value."

The Committee's recommendations were reviewed and considered by the Parks Division and legislators during the 1991 legislative session. Many of the recommendations were already being carried out by the current Parks Division administration.

Annual Rule on Restricted Campgrounds. Sections 23-1-106 and 87-1-3-3 MCA authorize the Department and the Fish, Wildlife and Parks Commission to make rules governing the use, occupancy, and protection of the lands and property under their control.

1.3.5 Legal Considerations

When project planning and development is being considered on federal land, there are rules, laws, and executive orders that may be triggered depending on the activity contemplated. These include but are not limited to the Clean Water Act, Endangered Species Act, Fish and Wildlife Coordination Act, National Historic Preservation Act, Clean Air Act and the National Environmental Policy Act. For example, if management recommendations involved site disturbance, a cultural resource inventory would have to be conducted prior to final evaluation of the action.

State laws to be considered include the Montana Environmental Policy Act and other state and local laws and ordinances, such as the Streambed Protection Act.

1.3.6 Permits

Certain uses may be granted by Reclamation while others are handled by DFWP or BLM. Reclamation retains the right to grant easements to cross its lands, and to review third-party requests for use of lands such as grazing permits. In addition, it issues permits for all improvements within easements, such as culverts and bridges, pipelines, and utilities. Special use permits are also considered for rock-collecting, archeological investigation, airports, wells, mineral exploration and extraction (including sand and gravel), surface water use or sale, and material storage. Pesticide and herbicide application on Reclamation lands require a plan and permit. Burning permits on Reclamation lands are issued by the appropriate county. Depending on the magnitude of the area to be burned, the state Air Quality Bureau may need to issue a permit.

DFWP issues permits for group use, special events such as regattas, agricultural leases for grazing and beehives, entrance and annual use, and building permits for structural alteration of

cabins and concessions facilities. Concessions improvements are reviewed by the DFWP's Design and Construction Bureau.

Enforcement of building permits has been inconsistent. DFWP, Reclamation, and CFRA are writing rules for management of the cabin sites and subsequently developing a standardized permit system to include all land-based structures, including retaining walls, staircases, and boathouses (Darlene Edge, DFWP, personal communication, 9/25/91).

BLM issues oil and gas leases on Reclamation lands with concurrence from Reclamation. Permit stipulations are jointly developed with Reclamation staff.

1.4 PUBLIC INVOLVEMENT

1.4.1 The Process

A concerted effort has been made to involve interested parties, including agencies, special interest groups, and individuals, in planning for Canyon Ferry. Public involvement in planning began even before the inception of this management plan.

In 1986, the Lewis and Clark County Commission formed a Steering Committee to try and address interagency management concerns at Canyon Ferry. This local Steering Committee was made up of representatives from the Lewis and Clark County Commission, Broadwater County Commission, Canyon Ferry Recreation Association, Townsend Chamber of Commerce, Helena Chamber of Commerce, Bureau of Land Management, USFS, and an at-large public member. Reclamation and the DFWP worked closely with this Steering Committee until the decision was made to prepare a Resource Management Plan. The concept of such a plan was thoroughly discussed and reviewed with this Committee as were the public involvement needs of such a planning effort.

Once the decision was made to prepare a Resource Management Plan (RMP), a formal public involvement plan and program was required. These were developed in accordance with the guidance contained in Reclamation Instructions, Part 351, Chapter 14 Public Involvement Plans (see Appendix B, Public Involvement Plan) and also conform to the requirements of the Montana Environmental Policy Act (MEPA).

The Consultant retained by the DFWP was charged with heading up and coordinating the Public Involvement Program. However, DFWP, as management agency for Canyon Ferry State Park, continues as the lead agency for the management planning effort; all press releases and other information were disseminated by DFWP.

1.4.2 Public Involvement Activities

DFWP Master Advisory Committee

The original Steering Committee was expanded to include additional members of the public, special interest groups, and governmental agencies. The Committee was renamed the DFWP Master Advisory Committee and has served in an advisory capacity, functioning as a sounding board as the study progressed.

Public Meetings

Four public meetings were held during the scoping phase to identify major issues: at Helena, Bozeman, Butte, and Townsend. During the consideration of RMP alternatives and the draft RMP, this process was repeated.

Mailing List

A mailing list was developed to include all involved agencies, the Master Advisory Committee, and members of the public. A mailing that described the draft RMP, identified where copies of the draft RMP could be reviewed, and announced public meetings to discuss the draft RMP, was made at the time of completion of the draft.

Press Releases

Press releases were prepared and submitted periodically to the media within the region at key points in the development of the Management Plan.

Schedule

A schedule of planned public involvement activities was integrated with the development of the Resource Management Plan and coordinated with related elements. Public involvement was scheduled at key points in the plan's development.

Interested Publics

Reclamation and DFWP have identified and developed the following list of agencies, local groups, and individuals in the region that are most likely to be interested in the Management Plan:

- a) local government
- b) state legislators
- c) chambers of commerce
- d) fishing clubs and organizations
- e) sportsmen clubs and organizations
- f) hunting clubs and organizations
- g) recreation organizations
- h) recreational vehicle groups
- i) state and federal agency representatives
- j) local wildlife and bird viewing groups
- k) commercial operators (concessionaires) at Canyon Ferry
- l) various individual members of the public who use Canyon Ferry

1.4.3 Issue Identification

Issues associated with planning for Canyon Ferry were identified from the testimony given at the four scoping meetings, from discussion during Master Advisory Committee meetings, and from discussions with DFWP and Reclamation staff. These issues are summarized below:

-Operation of the reservoir by Reclamation and the resulting impacts on power generation, irrigation, flood control, recreation, fishery and wildlife.

-Operations of present concessionaires and the need for additional concessions in the future versus local area commercial establishments.

-Continuation of present cabin site leases and the possibility of creation of additional leases in the future.

-Public health considerations of water, sewage, and solid waste associated with present land uses and possible future uses.

-Adequacy and maintenance of present roads and the need for additional road access to the reservoir. Problems associated with unofficial proliferation of roads around reservoir and the needs and problems caused by off road vehicles.

-Present and future community service needs associated with the recreational and residential uses of Canyon Ferry. Such services include police, fire and other emergency services, schools, and utilities.

-A variety of resource considerations such as:

- needs and quality of the fishery;
- needs and quality of wildlife, including big game, upland birds, waterfowl, and non game species;
- special needs associated with raptors;
- water quality of the reservoir;
- control of noxious weeds around the reservoir;
- sources and control of noise pollution, and
- visual aesthetics.

-Demand for and specialized needs of the variety of present and anticipated future recreational uses of the reservoir and adjoining lands such as:

- camping
- boating
- fishing
- hunting
- swimming
- scuba diving
- float-plane use
- windsurfing
- ice boating
- jet skiing
- handicapped activities

-A variety of management issues associated with the present and future use of Canyon Ferry such as:

- user fees
- management entities
- economic development/revenue generation
- financial and other impacts on area communities
- marketing of the recreation area
- consolidation of management
- future management
- future funding.

These issues have driven the management plan; they are addressed in Chapter III, Needs, Planning Constraints, and Opportunities, and will aid in the direction of the management alternatives.

CHAPTER 2 EXISTING ENVIRONMENT**2.1 GEOLOGY**

Geology at Canyon Ferry can be divided into four major geological types: tertiary lake beds, igneous formations, quaternary alluvium, and sedimentary formations that have been identified from rock outcroppings (see Figure 3).

2.1.1 Tertiary Lake Beds

Tertiary lake beds cover most of the northeast and southwest portions of Canyon Ferry area. These deposits overlie eroded surfaces of folded and faulted older rocks and underlie most of the younger sediments in the Townsend Valley. Tertiary lake beds have been identified mostly on the gently sloping plains, characteristic of the eastern shore below the Big Belt Mountains, and the western shore below the Spokane Hills and Elkhorn Mountains.

Characteristics of the tertiary lake beds of the Oligocene series are light-colored, fine-textured sediments and small amounts of interbedded sand and gravel, along with some finer-grained volcanic ash. East of the Spokane Hills, the tertiary deposits are identified as conglomerate interbedded with red shale and some bentonitic materials. The land southwest of the Big Belt Mountains is comprised of reworked tuffaceous material without bentonite, and identified as fine sand to coarse gravel. Tertiary deposits of the Miocene series are poorly exposed, but have been found in bluffs that border the east bank of the Missouri River between Confederate Gulch and Canyon Ferry Reservoir. Characteristics of the Miocene tertiary beds are light buff-colored sandy clay, and sand and gravel beds overlain by conglomerate. Tertiary rocks are from 4,000 to 6,000 feet thick in the Townsend Valley.


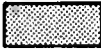


2.1.2 Igneous Formations

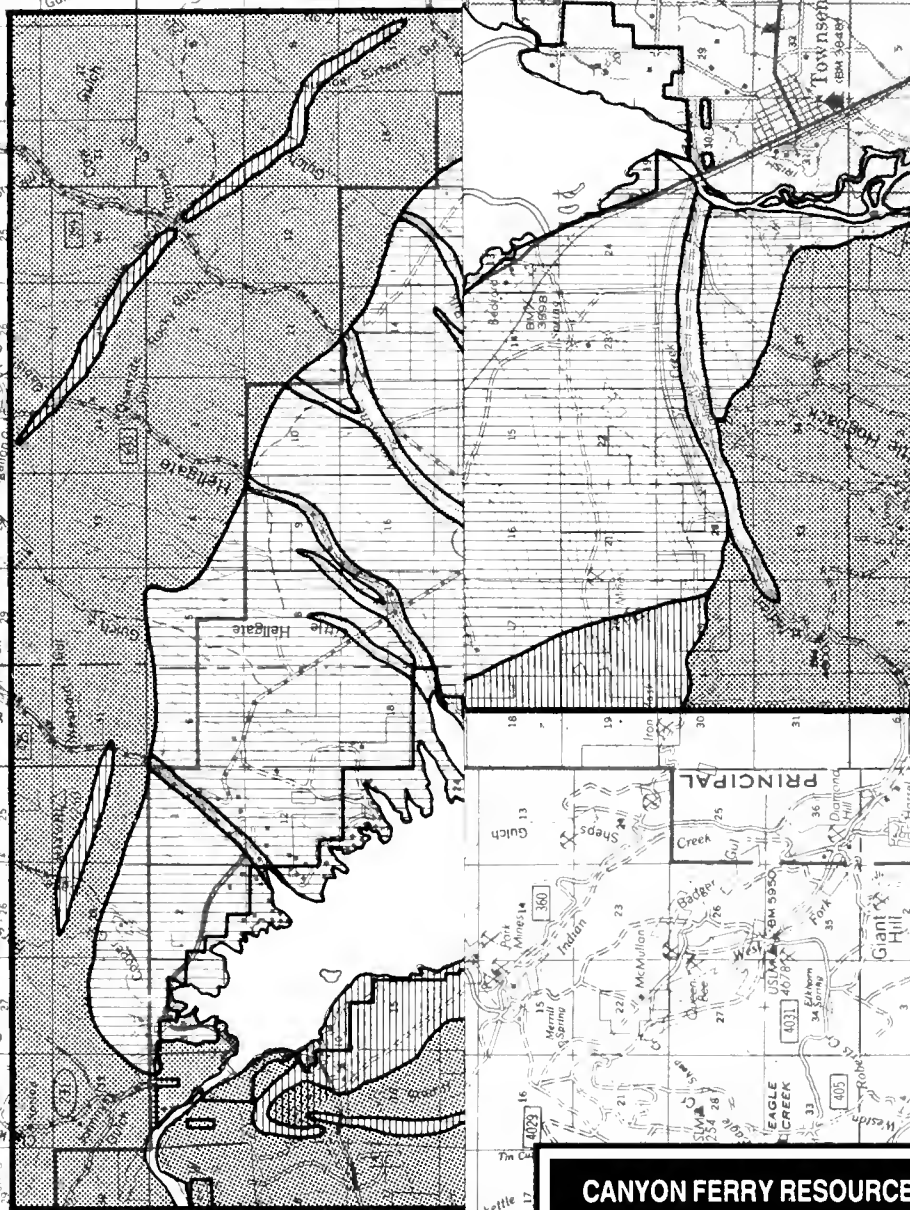
Igneous rocks intrude into the sedimentary deposits in the Townsend Valley, occurring as dikes, stocks, sills, and small plugs. Outcroppings of igneous rocks have been identified on the west shoreline from Yacht Basin to Crittendon recreation area. Igneous rocks have been classified into five principal types but occur basically as fine- to coarse-textured rocks consisting of different mineral mixtures. Generally, igneous rocks occur as relatively thin sills, intruding between beds of other rock.

2.1.3 Quaternary Alluvium

Very young sediments of quaternary alluvium were deposited in the Townsend Valley when swamps, lakes, and streams were abundant. Quaternary alluvium deposits have been identified in the bottomland terrain on the southeast part of the reservoir, in drainageways on the eastern shore of the reservoir, and on gently sloping drainageways on the western shore of the reservoir. Alluvium deposits on folded and eroded surfaces of tertiary and older rocks, are comprised of granite, quartzite cobbles, sand, silt, and gumbo clay or bentonite of not more than 60 feet thick. Thicker and coarser textured alluvium is found near the mountains whereas thinner and finer-textured material may be found toward the valley.

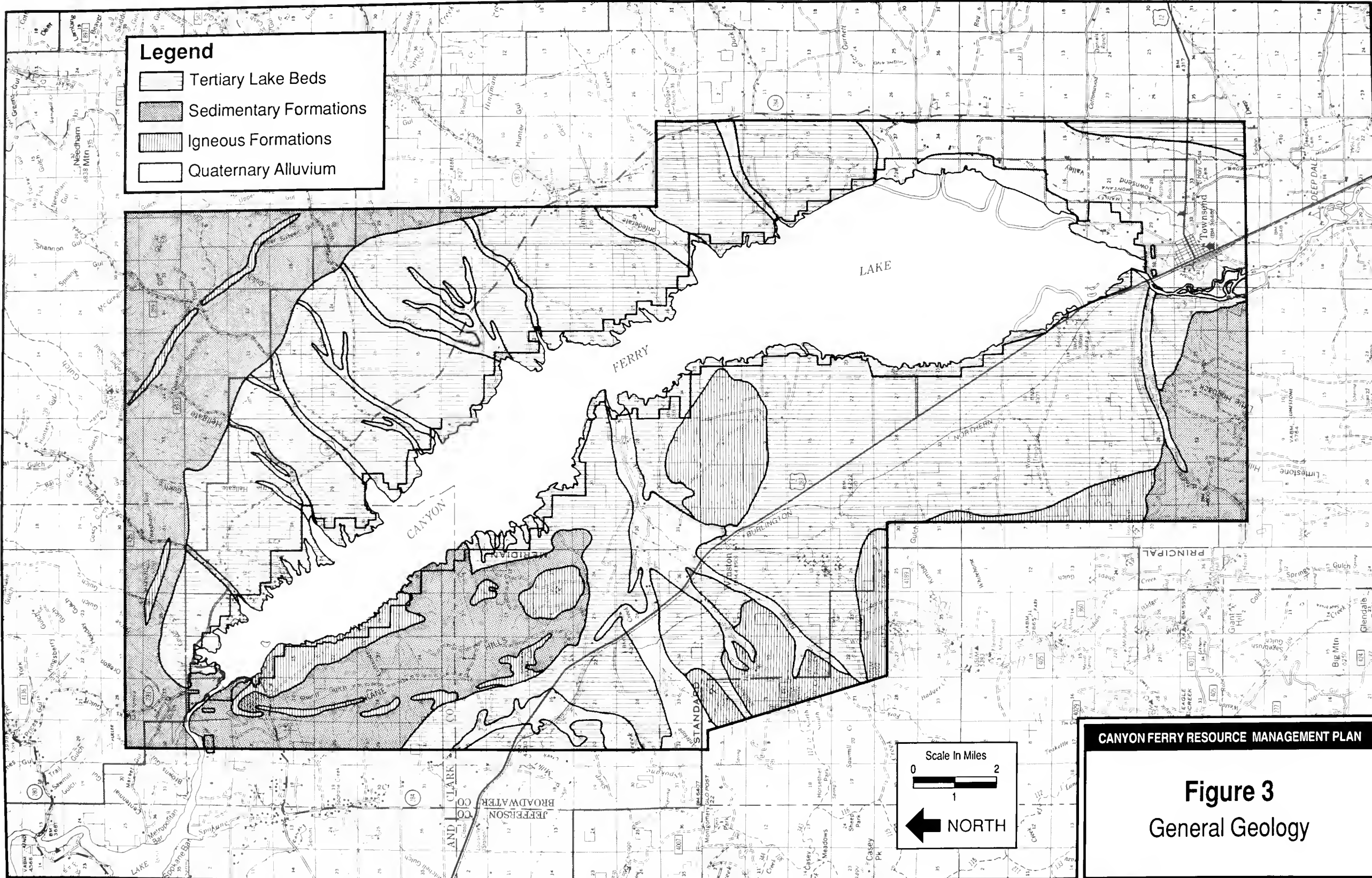
Legend

-  Tertiary Lake Beds
-  Sedimentary Formations
-  Igneous Formations
-  Quaternary Alluvium



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 3
General Geology



2.1.4 Sedimentary Formations

The last general geological type found in the Canyon Ferry area is sedimentary formations. The Big Belt Mountains to the east of Canyon Ferry, and the Spokane Hills to the west, are similar geologically. The oldest rocks in the Big Belts and Spokane Hills are sedimentary. These rocks were at one time mud and sand in the bottom of a sea that covered this area more than 1,000 million years ago. Heat and weight of overlying formations have changed these sediments into rocks. Younger sedimentary rocks, such as sandstone, limestone, and shale, can be seen overlying the very old rocks.

2.2 SOILS AND TOPOGRAPHY

2.2.1 Soils

Soil Conservation Service soils data for Lewis and Clark and Broadwater counties were reviewed within the study area. Starting at the east shore, and travelling south from the dam, the dominant soils are moderately fine-textured and shallow-to-deep to bedrock (ten to 40+ inches). The surface layer is thin and has more than 15 percent coarse fragments: gravel and cobblestone. These soils are located on hilly uplands (see Figure 4). From Magpie Bay south, with only two exceptions, soils are deep and medium-textured silt and loam. They contain a high amount of carbonates and are used primarily for nonirrigated cropland and range. These gently sloping terraces extend approximately four miles east from the reservoir to the base of the Big Belt Mountains. Soils are moderately permeable.

Two drainages, Duck Creek and Confederate Gulch, intersect the terraces on the mid-east shore. Soils here are deep and relatively poorly-drained. Soils at the south end of the lake within the Missouri River floodplain are similar.

Travelling north on the west side of the lake, soils are again located on terraces that gradually slope to the reservoir. They are deep and well-drained. In the Silos area these loamy soils are also cobbly and gravelly, with well-established drainageways. From south of White Earth to Crittendon, deep well-drained soils are located on gentle-to-steep fans and terraces.

From Crittendon to Yacht Basin, soils are generally deep and moderately-coarse to coarse-textured. These soils all contain a high amount of sand-size soil particles. They are used mainly for range and understory grazing. From Yacht Basin to the dam, soils are again located on steep hillsides, and are similar to those first described along the east shore.

All east-shore soils are considered highly wind-erosive. Their high lime content produces the dust evident during windy days and has prompted the use of dust-abatement treatment on east-shore roads in particular. This soil property, combined with the exposure of about 9,000 acres of bottomland during low-flow periods, also prompted the Reclamation to construct the waterfowl ponds at the south end of the lake in 1973. During high wind events, dust storms from this source were not only a nuisance, but a health hazard to people at Townsend. East-shore soils are also subject to water erosion when vegetation is removed by off-road vehicle use or overgrazing.

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Soil Associations

SOILS ON BOTTOM LAND

- 1 Villy-Toston-Rivra association: Nearly level to gently sloping and gently undulating, deep, poorly to moderately well drained soils on low terraces and flood plains.

SOILS MAINLY ON INTERMEDIATE TERRACES AND FANS

- 2 Amesha-Brocko-Mussel association: Nearly level to steep, deep, well-drained soils on terraces and fans.
- 3 Radersburg-Hilger-Scavo association: Nearly level to steep, deep, well-drained and somewhat excessively drained soils on terraces, fans, and mountain foot slopes.
- 4 Chinook-Amesha association: Nearly level to steep, deep, well-drained soils on terraces, fans, and uplands.

SOILS MAINLY ON HIGH TERRACES AND FANS

- 5 Sappington-Martinsdale association: Gently sloping and sloping, deep, well-drained soils on terraces, fans, and benches.
- 6 Passcreek-Bridger-Rooset association: Sloping and rolling to steep, moderately deep and deep well drained soils on terraces and fans, and on benches, ridges, and side slopes of uplands.
- 7 Lake Creek-Whitore-Loberg association: Moderately steep to very steep, moderately deep and deep well-drained soils on mountainous uplands and high fans.
- 8 Musselshell-Crago association: Gently sloping to steep, deep, well-drained soils on terraces, fans, and foot slopes.

SOILS ON SHALE AND SANDSTONE UPLANDS

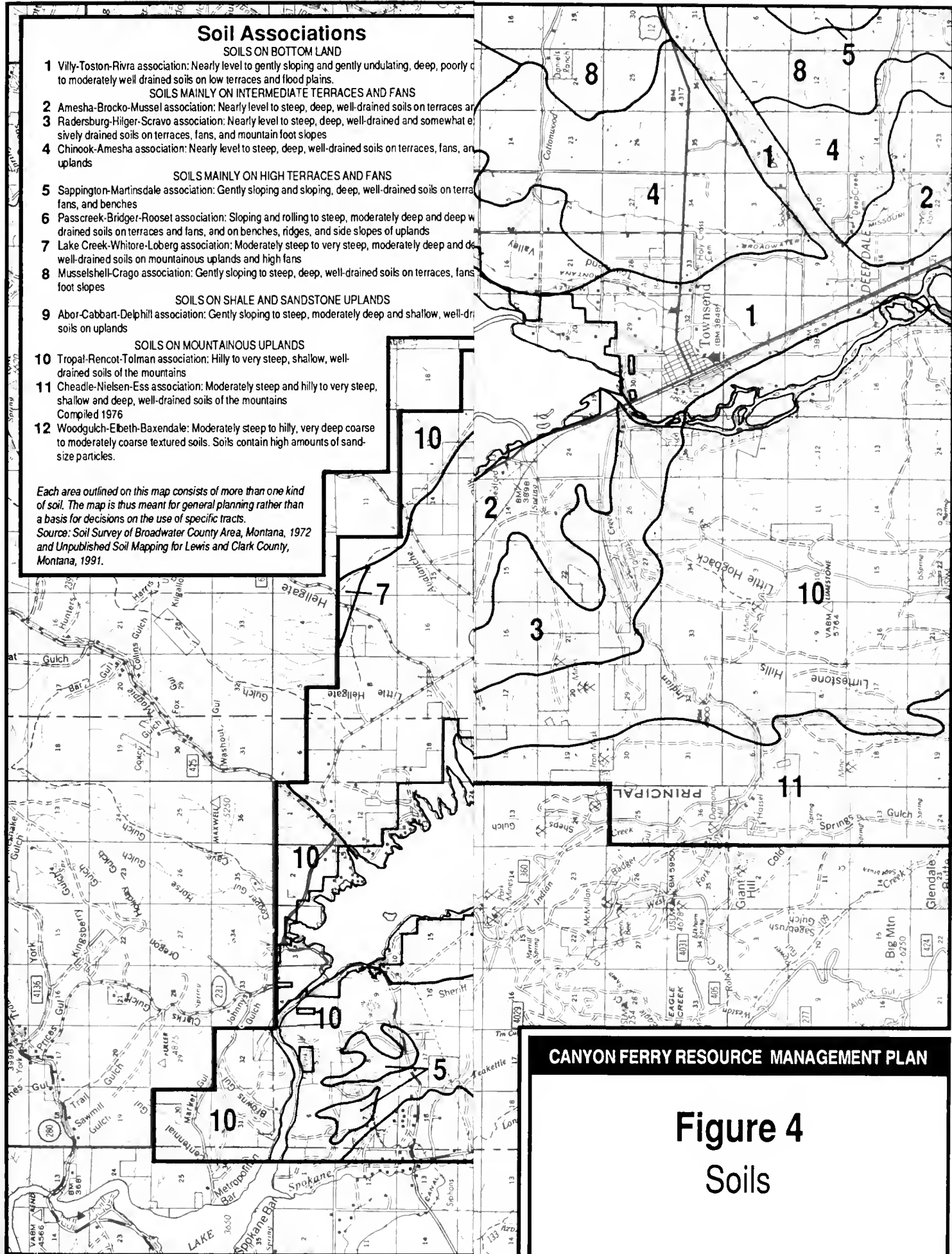
- 9 Abor-Cabbart-Delphill association: Gently sloping to steep, moderately deep and shallow, well-drained soils on uplands.

SOILS ON MOUNTAINOUS UPLANDS

- 10 Tropat-Rencot-Tolman association: Hilly to very steep, shallow, well-drained soils of the mountains.
- 11 Cheadle-Nielsen-Ess association: Moderately steep and hilly to very steep, shallow and deep, well-drained soils of the mountains.
- 12 Woodgulch-Elbeth-Baxendale: Moderately steep to hilly, very deep coarse to moderately coarse textured soils. Soils contain high amounts of sand-size particles.

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

Source: Soil Survey of Broadwater County Area, Montana, 1972 and Unpublished Soil Mapping for Lewis and Clark County, Montana, 1991.



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 4
Soils

Soil Associations

SOILS ON BOTTOM LAND

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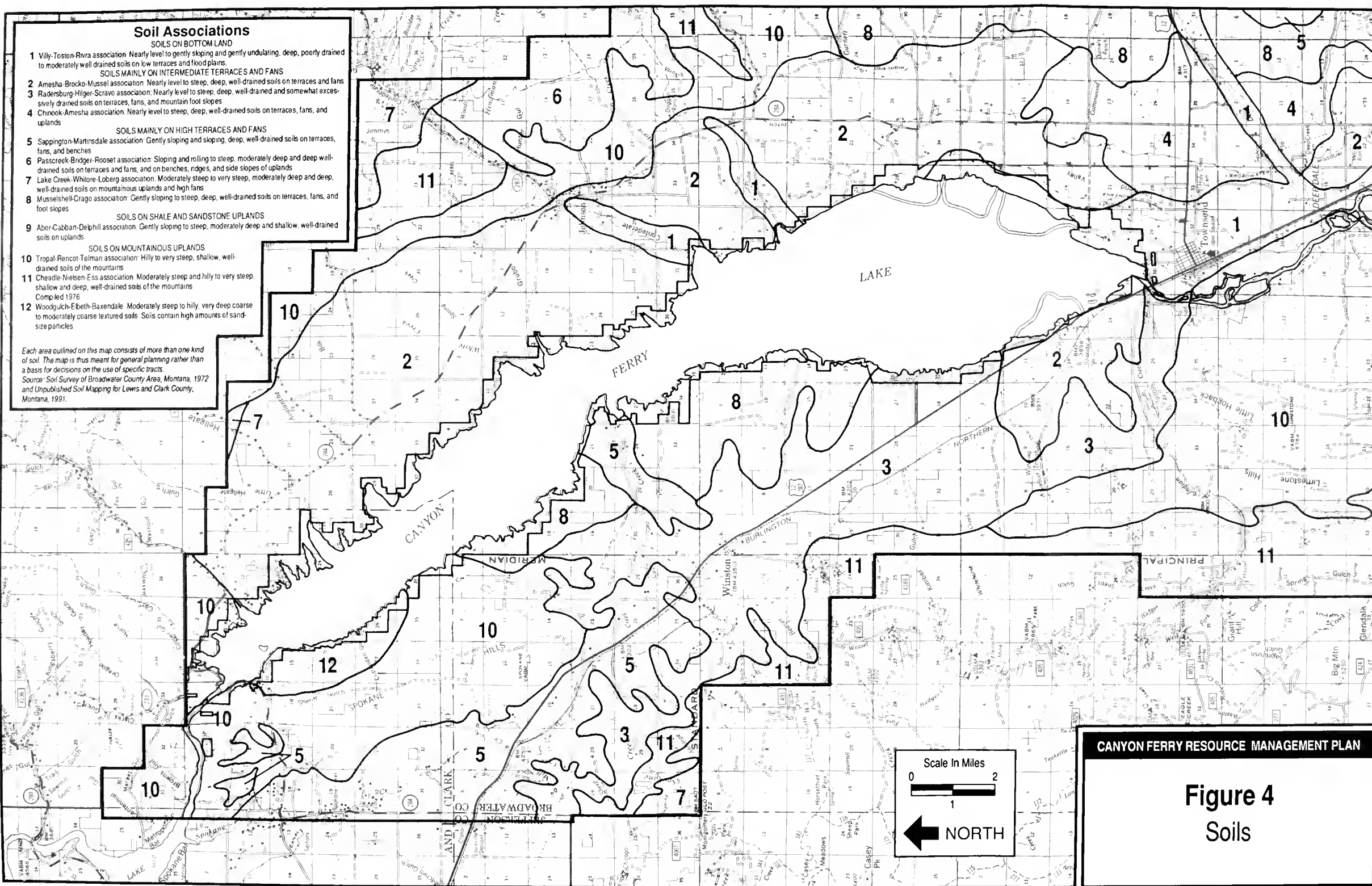
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CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 4
Soils

West-shore soils are less erodible and generally more cobbly. Additional soils considerations related to septic tank drainfield suitability are discussed in the Water Resources section of this document.

Steep slopes, shallow depth to bedrock, and highly-erodible soils have presented problems in past development of the area (see Community Services and Transportation). Soils conditions need to be considered in any further development of the park.

Erosion

The three primary causes of erosion at Canyon Ferry at present are wave action along the shoreline; removal of vegetation due to human use such as off-road vehicle use; and runoff from storm events.

Erosion due to wave action is evident around most of the shoreline. Areas where the shoreline is nearly level are the only exceptions, such as Confederate Bay (see Topography and Figure 5). No studies have been conducted to determine the rate of shoreline erosion. In some instances, the loss of shoreline materials has prompted remedial action such as safety fencing at Lorelei, and retaining walls and rip-rapping below the cabin sites.

Off-road vehicles can remove vegetation that is essential for soil protection. Since most of the soils around Canyon Ferry are moderately- to highly-erosive, loss of vegetation quickly results in rill and gully erosion when storm events occur. This type of erosion is obvious around the campgrounds on the north shore where people have used dirt bikes to hill climb, and at Hellgate where recreationists have driven the shoreline to the north.

Wind and rain have also caused soil loss, such as the rill erosion along the shoreline where wave action has caused the banks to sluff, denuding them of protective vegetation.

Prime Farmlands

It is estimated that soils on about 1,200 acres of the study area are considered "prime if irrigated"¹ (see Figure 15). Most of these soils, about 1,000 acres, are located in the Wildlife Management Area (WMA) at the south end of the lake although there are scattered parcels of prime if irrigated soils on the southwest and mid-east sides of the reservoir.

These soils would require environmental cropland conversion review by the Soil Conservation Service if development was contemplated by management agencies. Such review would be appended to an environmental document.

2.2.3 Topography

The northwest shore, from Yacht Basin to about six miles south, is steeply sloping, often along sheer, rocky cliffs. The majority of Reclamation lands, however, are moderately sloped (5-10

¹ USDA Soil Conservation Service, 1983. Broadwater County Area, Montana: Prime Farmland If Irrigated. Technical guide, Section II-A-4. May 1983. USDA, SCS, MT.

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percent) toward the reservoir. Gentle slopes of less than five percent are located mid-reservoir on both the east and west shores (see Figure 5).

2.3 WATER RESOURCES AND QUALITY

2.3.1 Ground Water

A large aquifer underlies the Townsend Valley. Ground water within this aquifer is confined in quaternary and tertiary deposits. Rainfall and snowmelt recharge the ground water in the higher elevations while perennial mountain streams, irrigation canals and laterals, and seepage from irrigation water recharge ground water in the valley areas. Precipitation in the Townsend Valley recharges only the lower elevations of the valley where the water table is near the surface. Ground water in the valley is mainly drawn for domestic and irrigation use.

Well record data available at the Department of Health and Environmental Sciences (DHES), Water Quality Bureau (WQB), show that wells on the east shore serving the cabin sites are generally 100 feet deep or less. Yields of these wells generally range from ten to 40 gallons per minute (gpm). Further to the east on the bench, well depths are much greater; up to 400 feet. On the west shore, well log data show that depths range from 100 to 400 feet and yields are between ten and 45 gpm.

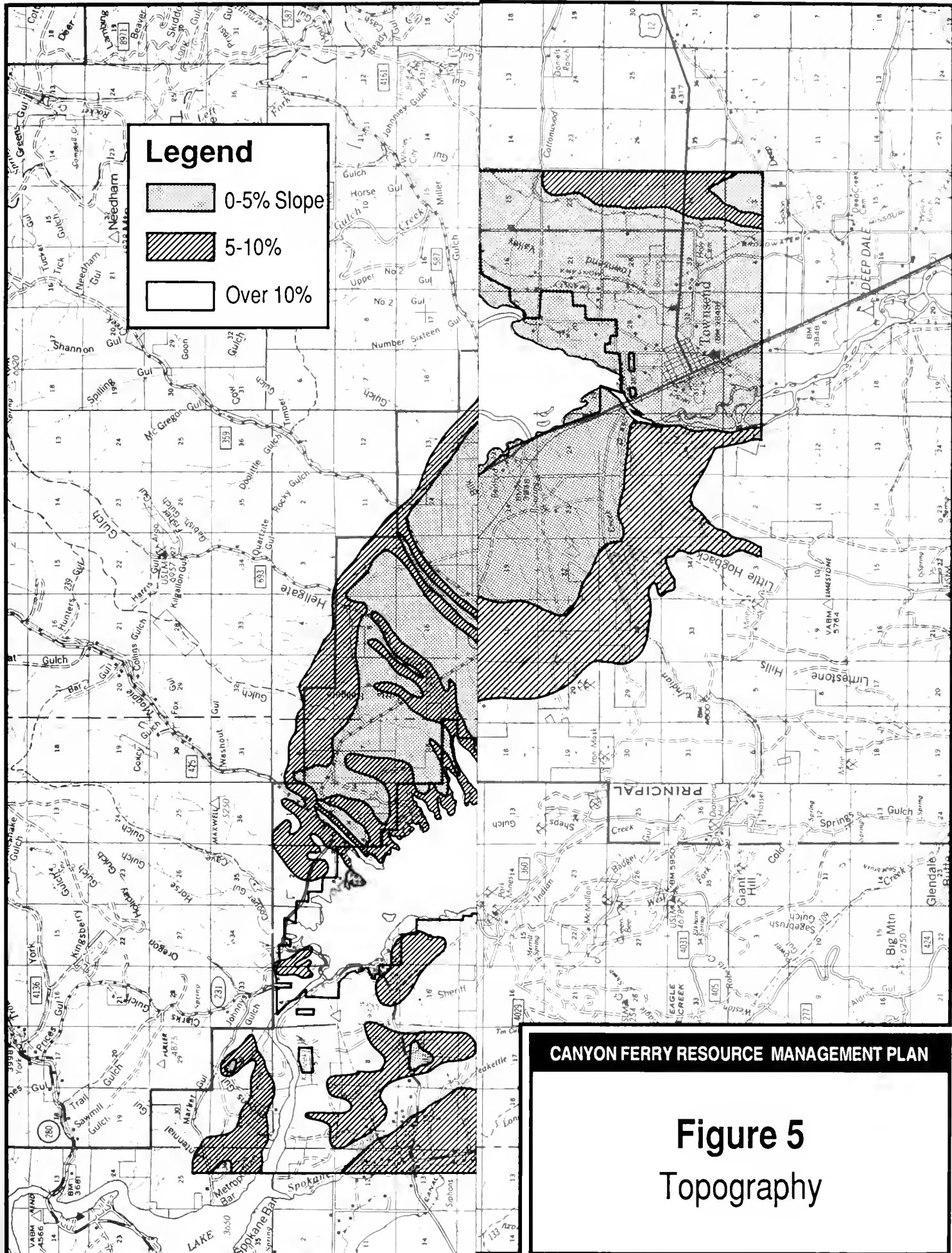
Well depths for the recreation sites are generally less than 100 feet except for Hellgate, where two wells exceed 100 feet. Water quality records for recreation sites around the lake include information for Silos, White Earth, Lewis and Clark, Jo Bonner, Riverside, Ponderosa, Hellgate, Indian Road, Chinaman's, Court Sheriff, and Canyon Ferry Shop building.

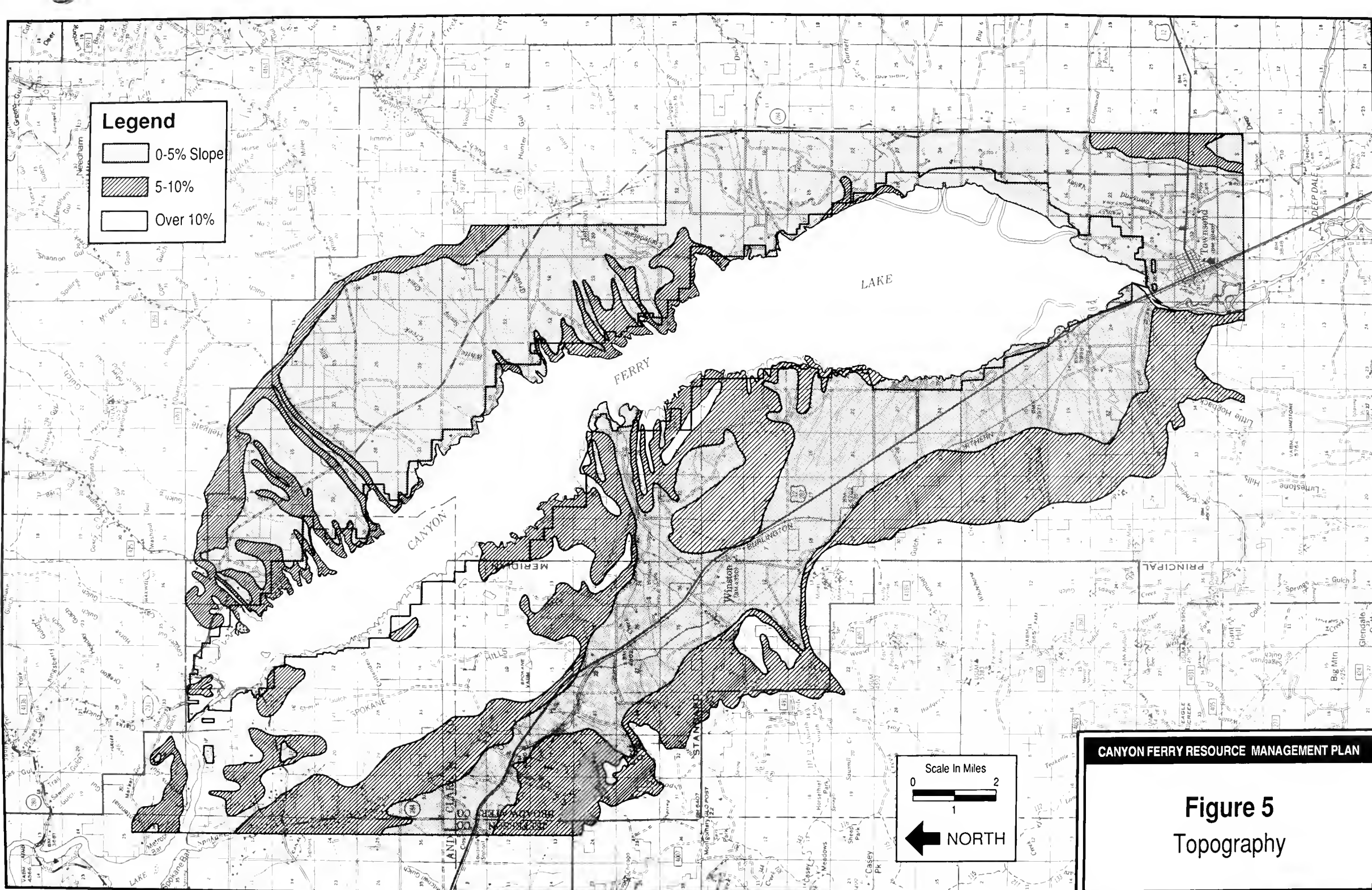
These wells are considered non-community public water supplies and are required to be tested for bacteria at three-month intervals. Water quality in the wells is monitored by DFWP personnel. Over the period of record, various wells at the recreation sites have shown occasional evidence of high coliform counts. Problems have been corrected by either shutting down the affected well and/or chlorination. If a campground's water supply is contaminated, state law requires its closure rather than termination of the well's use.

Records for non-community water wells, and wells at Kim's Marina and Riley's Bar, are within allowable drinking water standards for nitrates. Test data were not available for Yacht Basin.

A new federal public drinking water law came into effect in January 1991. The WQB adopted rules to comply with the new law, requiring testing of public water supplies on a monthly rather than quarterly basis, to become effective October 1, 1993. This will increase testing costs for the management agency.

Two ground water quality concerns were expressed by staff at the Lewis and Clark County Health Department. Fractured bedrock on the west shore may act as a conduit between septic tank drainfields and ground water supplies. In some cases, the department has required cabin site lessees to install a holding tank for on-site sewage disposal. These tanks are then pumped and the contents disposed of in the Helena sewage treatment system. The second concern is that the density of development and trend towards year-round occupation of the cabin sites, especially on the east shore, may eventually affect ground water quality if drainfields malfunction in treating





Legend

- 0-5% Slope
- 5-10%
- Over 10%

Scale In Miles

0 1 2

← NORTH

CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 5
Topography

on-site effluent. The cabin sites are small, having been created before state law required a one-acre minimum lot size for having both septic tank and wells. This sometimes precludes adequate space for treatment, or replacement of drainfields. Staff believes that work should begin now on a long range master plan for replacing individual on-site septic systems with alternative processes.

2.3.2 Surface Water

The Missouri River drains 43,000 square miles before emptying into Canyon Ferry Reservoir. The annual inflow, measured at the Toston gaging station, upstream from the reservoir, has averaged about 3.8 million acre feet. Annual volumes have exceeded five million and fallen below two million acre-feet (U.S. Department of Interior various dates).

Although the Missouri provides the primary source of inflow to the reservoir, eleven perennial streams also feed into Canyon Ferry. In the spring and summer months, much of the water in these creeks is diverted for irrigation; thus, only a small amount of water reaches the reservoir from these sources. Some inflow to the lake is contributed from subsurface gravels within the reservoir but the amount is unknown.

Water quality in the reservoir is generally suitable for propagation of cold-water fish, is safe for water sports, and is potable after filtration and treatment. For brief periods during hot, dry conditions, toxic algae blooms have occasionally lowered water quality. (See discussion below). Historical water quality data for the Missouri River, recorded at the Toston gaging station, show that the water flowing into the reservoir is of productive calcium-bicarbonate type, that it is hard and nutrient rich, with a high phosphorous level. The pH, dissolved oxygen content, and water temperature produce conditions suitable for a cold-water fishery. Salinity is low and aside from arsenic, heavy metals are not a problem both because of low levels and high alkalinity (a neutralizer) (U.S. Department of Interior various dates).

An examination of more recent water quality data (1980 to 1989) showed that for five parameters (dissolved oxygen, dissolved solids, nitrite plus nitrate, arsenic, and bacteria) there has been little change in water quality. No longer-term trend analysis has been conducted (Roger Knapton, USGS, personal communication, 2/20/91).

There are two primary contaminants in Canyon Ferry; phosphorous and arsenic. Both are naturally-occurring. Phosphorous enters the lake largely from natural sources in the Missouri Basin; soil and water in southwest Montana are particularly rich in phosphorous. This natural fertility sets the stage for blue ribbon trout streams, but also contributes to the nutrient load at Canyon Ferry. Arsenic is carried to the Missouri via the Madison River, a tributary that receives large volumes of arsenic-bearing thermal water from Yellowstone Park. Other sources of contamination are of less concern but may increase in importance in the future, or be of greater concern in localized areas.

A toxic blue-green algae bloom in 1984 first focused public attention on the reservoir's water quality, signalling the need for a closer assessment of potential sources of contamination to the lake. The combination of phosphorous and nitrogen with hot, dry, still conditions in summer months has served to promote algal blooms, some of them toxic. In a 1986 investigation by the MSU Water Resources Center, it was found that the same blue-green algae species have been present at about the same levels and seasonal periods since the reservoir was filled. Blue-green

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There are two primary contaminants in Canyon Ferry; phosphorous and arsenic. Both are naturally-occurring. Phosphorous enters the lake largely from natural sources in the Missouri Basin; soil and water in southwest Montana are particularly rich in phosphorous. This natural fertility sets the stage for blue ribbon trout streams, but also contributes to the nutrient load at Canyon Ferry. Arsenic is carried to the Missouri via the Madison River, a tributary that receives large volumes of arsenic-bearing thermal water from Yellowstone Park. Other sources of contamination are of less concern but may increase in importance in the future, or be of greater concern in localized areas.

A toxic blue-green algae bloom in 1984 first focused public attention on the reservoir's water quality, signalling the need for a closer assessment of potential sources of contamination to the lake. The combination of phosphorous and nitrogen with hot, dry, still conditions in summer months has served to promote algal blooms, some of them toxic. In a 1986 investigation by the MSU Water Resources Center, it was found that the same blue-green algae species have been present at about the same levels and seasonal periods since the reservoir was filled. Blue-green

algal dominance in the lake is attributed to high natural phosphorus concentrations, a low nitrogen-to-phosphorous ratio caused in part by the deep-water discharge of nitrogen via the dam, and warm, still water conditions. Aside from periodic decreases in aesthetics along the shoreline, the major water quality problem caused by the algae is its periodic toxicity. (For further discussion, see Health Considerations.)

Measurements of arsenic in the Missouri River at the Toston gaging station consistently exceed the state water quality standard for surface water, increasing the risk level for skin cancer. They are, however, well below the state public drinking water supply standard of 50 mg/l. The reason for the difference between the two standards is that the latter standard is based on health effects, and economic and technical considerations. The Helena water treatment plant removes about half of this arsenic, and its concentration is further diluted by mixing from the Tenmile system.

Preliminary data indicate that there have not been significant concentrations of arsenic in soils from irrigation. Further, there is no evidence that organic arsenic, the form that would be found in soils after irrigation, is a health hazard (Abe Horpestad, DHES, personal communication, 2/21/91).

Since shellfish are notorious for concentrating heavy metals in their body parts, a Canyon Ferry Limnological Institute (CFLI) study investigated the concentrations of arsenic in crayfish taken from the lake in September 1990. This study concluded that, of the sample tested, the concentration of arsenic in crayfish was 41.9 times greater than the water from which they were taken. While these data suggest a possible health concern, their author also recognizes the need for further study, not only on crayfish but other species in the food chain. The Institute continues to monitor arsenic at four sites along the Missouri, above and below the dam. Levels below the dam diminish in arsenic concentration as other feeder streams contribute flow. The USGS also continues to measure arsenic in the Missouri at the Toston gauging station.

The Department of Natural Resources and Conservation (DNRC) received a grant from the 1991 legislature to study arsenic in the Upper Missouri River basin. The first phase will measure arsenic concentrations in ground water between Three Forks and Canyon Ferry to see if levels were elevated in areas subject to long-term irrigation. The second phase will collect 1.5 years of data to enable the design of a water quality model for the upper basin. This will aid in understanding the temporal and spacial concentrations of arsenic as well as in future decisions about water allocations (Chuck Dalby, DNRC, personal communication, 2/13/91).

For the past seven years, CFLI has collected water quality data. Current findings show that the extensive drainage area of the Missouri before it reaches the reservoir increases its potential to pick up and carry contaminants. Agricultural drainage entering the reservoir from almost all of its sources carries phosphates and nitrates, though not in significant quantities in comparison to natural sources of phosphorous. The Lake and Stream Subcommittee of the Headwaters Resource Conservation and Development District recently voted to cease using herbicides to control weeds on canals and ditches associated with the reservoir (Ray Doig, Headwaters Resource Conservation and Development District, personal communication, 2/7/91). As human uses increase on and around the lake, the potential for pollutant contribution from poorly-functioning septic tank drainfields, motorboat fuels, and runoff from roads and parking areas also increases.

Lewis and Clark County Health Department is requiring sewage holding tanks instead of drainfields on some west-shore sites because steep slopes, excessively permeable soils, and shallow depth to bedrock provide a quick conduit to surface waters. On the east shore, impermeable soils and short distance to surface water have caused problems on some sites. Holding tanks are allowed only by variance and only on existing sites where there are physical limitations that prevent other recourse. There are about five such sites at Canyon Ferry that have been approved by the Lewis and Clark County Health Department. To monitor the condition of the tanks, owners are required to submit pumping records to the Health Department. If these are not received on an annual basis, the owner is then required to allow tank-pumping tests by the Health Department. Of primary concern would be the potential human health risk associated with ingesting or being in contact with untreated water. Residential waste-water can contain hazardous and toxic wastes and viruses which, if poorly treated, can place users at risk.

The DHES is actively reviewing all underground gasoline storage tanks, including those at the concession sites. The Lewis and Clark County Health Department currently has review authority for these facilities although oversight for inspections is conducted by the state (Will Selser, Lewis and Clark County Health Department, personal communication, 1/14/92).

A variety of other pollutants may be reaching the lake, but their source and quantities are unknown. Disposal of hazardous materials such as solvents in unregulated areas is prohibited by state and federal regulation. Motor oils are not considered a hazardous material, and as such are unregulated (Howard Reid, Lewis and Clark County Health Department, personal communication, 2/19/91). Aerial spraying of crops may also contribute to water pollution within the lake from airborne chemicals (Don Johnson, Canyon Ferry Recreation Association, personal communication, 2/7/91).

2.4 VEGETATION

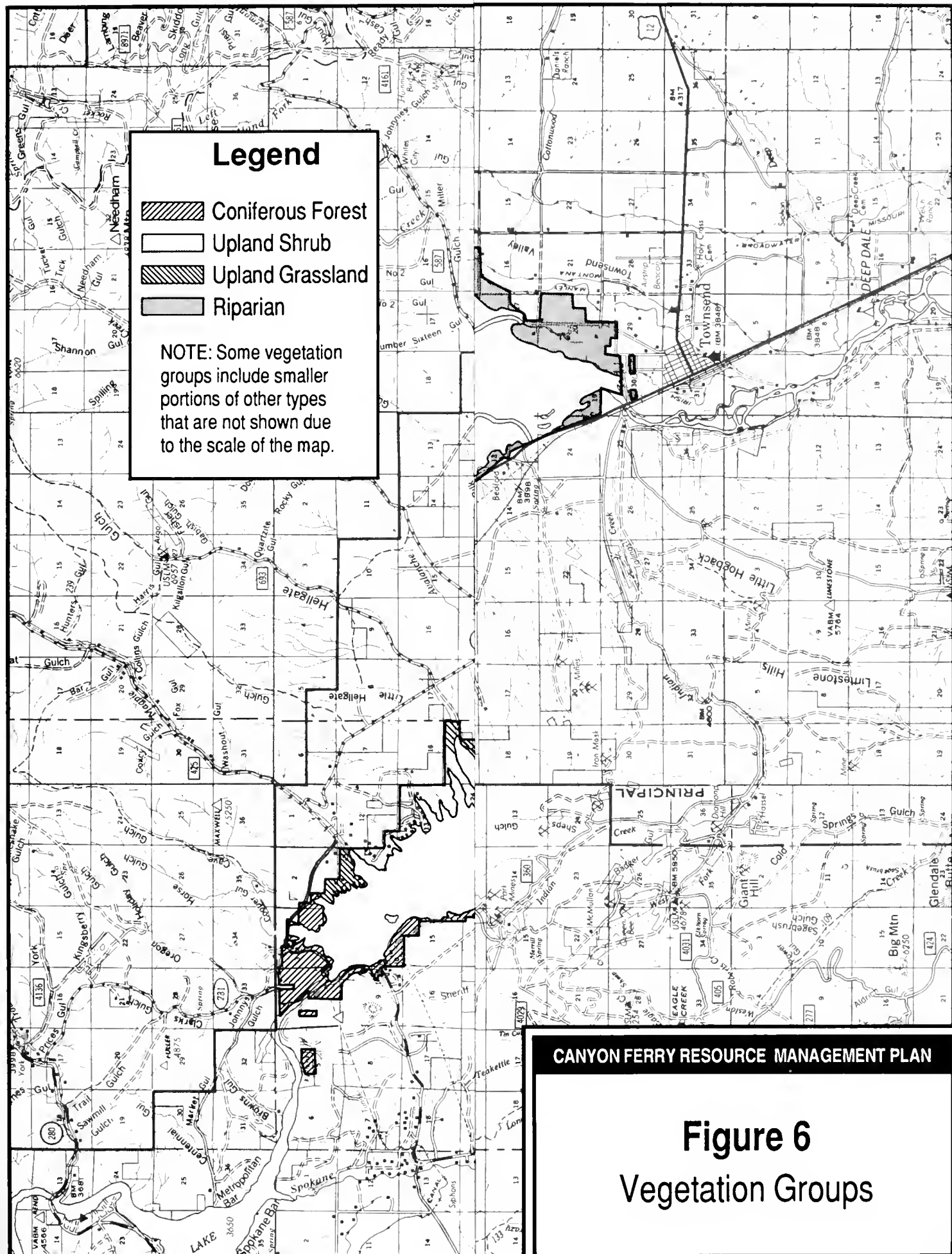
Vegetation information included in this plan was excerpted from a vegetation report prepared for the study area in the fall of 1991 by OEA Research, Helena, Montana. (Canyon Ferry Lake Vegetation, Wetlands, and Weed Inventory is available at DFWP or Reclamation offices).

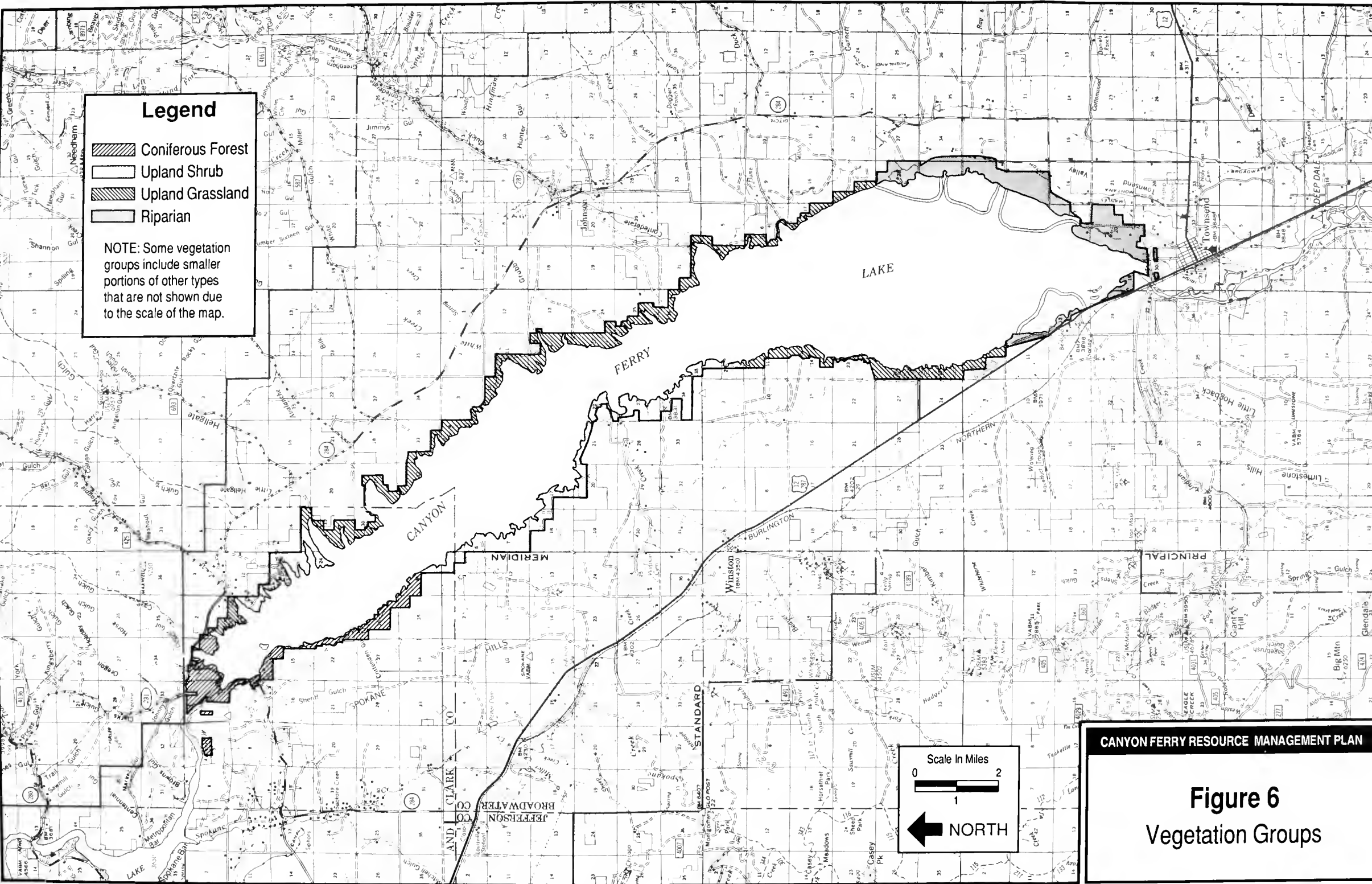
2.4.1 Habitat Types

Four distinct vegetative groups, based on life form and species composition, are present around the perimeter of Canyon Ferry Lake. The vegetative groups are grassland, upland shrub, coniferous forest, and riparian vegetation (see Figure 6). Within these four groups are several distinct habitat or dominance types that correlate to those described by Pfister (1977), Mueggler and Stewart (1980), and Hansen et al. (1988). Additionally, vegetation types are described that are primarily composed of introduced species, and do not correspond to a classification system.

Grassland

The grassland component is composed of two habitat types, one vegetation type, and two pasture types. The majority of the grassland area is composed of the needle-and-thread/blue grama habitat type (h.t.), dominating the central and southern portions of the study area. Meadows at the north end of the lake are composed primarily of the bluebunch wheatgrass h.t. Both habitat types correspond well to those described by Mueggler and Stewart (1980). The introduced





grassland vegetation type is present around the lake in drainage bottoms at the interface between riparian corridors and upland vegetation types. The two pasture types are primarily at the south end of the study area, within or adjacent to the Wildlife Management Area (WMA).

Upland Shrub

The study area encompasses two upland shrub types, both of which are restricted to the northern portion of the lake. They abut the needle-and-thread h.t. to the south, and the coniferous forest types to the north. The upland shrub types are the big sagebrush/bluebunch wheatgrass h.t., and the mountain mahogany/bluebunch wheatgrass h.t.

Coniferous Forest

Two coniferous forest habitat types are present at Canyon Ferry Lake: the ponderosa pine/bluebunch wheatgrass h.t. and the Douglas-fir/rough fescue h.t. They occupy the north and northwest portions of the shoreline from Magpie Bay on the east to the Lewis and Clark-Broadwater county line on the west.

Riparian Vegetation

There is an intermittent riparian zone around Canyon Ferry Lake. The largest riparian area is at the south end where the Missouri River forms a delta as it flows into Canyon Ferry Lake. Other zones of riparian vegetation include the larger drainages of Confederate Gulch, Beaver Creek, Duck Creek, and Magpie Creek. Shoreline riparian vegetation is evident in the vicinity of Goose Bay; the artificial ponds and associated islands on the east and west sides of the southern portion of the lake also support riparian vegetation.

There are two dominance types (d.t.) that occupy the majority of the riparian zones around the lake: Narrow-leaved cottonwood and sandbar willow. Three types that occupy small areas are quaking aspen, cattail and bulrush. All of the riparian areas around the lake are highly disturbed, as evidenced by the abundance of introduced pasture grasses and noxious weeds.

2.4.2 Rare and Endangered Species

No rare and endangered plant species were observed during the vegetation reconnaissance. One sensitive plant (rabbit crazyweed, *Oxytropis lagopus* var. *conjugens*) is known to occur in the study area. It is ranked as globally secure, but imperiled in Montana (G4T2, S2) by the Montana Natural Heritage Program (1991). It is found on the west shore of the lake, in the ponderosa pine h.t. The plant was not observed during the reconnaissance survey.

2.4.3 Wetlands

The importance of wetlands for purposes of providing vital wildlife habitat, watershed, erosion and flood control, and esthetic and recreational functions has been recognized in a variety of federal and state laws. When alteration of a wetland is contemplated, the Clean Water Act, especially Section 404, the Montana Streambed Preservation Act, especially Section 310, and potentially the National Environmental Policy Act and Montana Environmental Policy Act may come into effect. All individuals, and state and federal agencies are subject to these laws for

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activities within identified wetlands; at Canyon Ferry this would include activities such as construction of retaining walls, and future recreational development.

Aside from the lake itself, most of the individual wetland sites found in the study area are associated with the fringe of Canyon Ferry Lake and thus have only become established since dam construction and reservoir filling in the early 1950s (see Environmental Constraints). More recently established wetlands are associated with the diked ponds completed in 1978. Annual fluctuations promote the presence of 'drawdown' wetlands typified by non-persistent, often weedy hydrophytic (water-loving) vegetation. Long-term drawdowns encourage the development of more stable communities typified by pioneer species such as sandbar willow. Due to low lake levels in the last six years, vegetated wetlands around the lake have increased.

Wetlands are also associated with the Missouri River at the south end of the lake and perennial tributaries such as Duck Creek. These wetlands have existed for a long while although vegetation changes have occurred due to natural successional processes, the introduction of non-native plants, and human activities, such as farming.

Wetland dominance types are identified in the study area are shown in Exhibit 2. The dominance types have been grouped according to location around the lake. Each of the dominance types (d.t.'s) listed below may be found within an appropriate grouping. Please refer to Canyon Ferry Vegetation, Wetlands, and Weed Inventory-Appendix C, "Wetlands Classification", for more detailed information.

Narrow-leaved cottonwood d.t. This community was described above, however only a portion of this riparian community meets jurisdictional wetlands criteria. Typically where upland plants (such as Kentucky bluegrass, snowberry and juniper) dominate the understory, the soils are not hydric (water-associated). When species such as dogwood or sandbar willow are present, these areas meet the criteria.

Sandbar willow d.t. The sandbar willow d.t. is present along the shoreline, in bays, and in the complex of ponds and islands. It is also the most extensive wetland type identified. It often occupies an area of minimal soil development between the high water mark and the beginning of the narrow-leaved cottonwood d.t. Mudflats and shorelines in the bays have been colonized by this type over the last several years due to low water levels in the lake. Drier shoreline and pond areas dominated by this type include primarily introduced grasses and weedy forbs including smooth brome, Kentucky bluegrass, redtop, Canada thistle, musk thistle, spotted and Russian knapweed, whitetop, and broadleaf pepperweed.

Common cattail d.t. The common cattail d.t. was observed at several locations around the lake, from Riverside along the Missouri River at the north end of the study area, to the ponds and delta area at the south end. This d.t. is limited to small patches along river, stream, irrigation ditch, or lake shoreline at all but the southern end of the lake. Within the ponds, it is occasionally present along the inner shore of the dike. It is more prevalent along the shore of the ponds, although still intermittent in occurrence. Adjacent drier communities range from reed canarygrass to seeded stands of tall wheatgrass and weedy forbs.

Softstem bulrush d.t. Stands of soft- and hardstem bulrush were observed along the shoreline of ponds 2 and 3. Most stands were very small, occurred in water right at shore, and were

basically a monoculture. One was located adjacent to a cattail stand. Also bulrush was planted in a few places within the diked wildlife/waterfowl ponds. Adjacent dryland species include reed canarygrass, tall wheatgrass, Canada thistle, and a variety of weedy forbs.

Reed canarygrass d.t. Stands of reed canarygrass are found throughout the study area along stream banks or near the shoreline of the lake where the water table is at or near the ground surface. This type is extensive. The heavy sod formed by this species usually excludes other plants. Sandbar willow d.t. usually borders this type.

Common spikerush d.t. The common spikerush d.t. is found along the fringes of side channels and the delta of the Missouri River where water is slow-moving and seasonal fluctuations are not great. Associated species include common mint, silverweed cinquefoil, and sedges. Reed canarygrass often neighbors this type.

Needle spikerush d.t. The needle spikerush d.t. is found in the exposed pond bottoms and is typical of widely fluctuating water tables. It forms dense sods. Associated species include water grousel and dock. Adjacent communities include those dominated by aggressive pioneers of the exposed mudflats described below.

Seasonal mudflat d.t. This type includes a number of early successional species that are aggressive invaders of very shallow water and exposed mudflats of the ponds and in a few backwater bays of the lake that are exposed yearly as the lake levels drop. Typically these plants form narrow bands as sites dry out over the summer. Included in this type are Ladysthumb knotweed, golden dock, and common cocklebur. Adjacent wetter communities include needle spikerush. Drier sites are dominated by sandbar willow.

Sedge d.t. Pure sedge types are very limited in the study area. Sedges are usually found as components of other types. However, knot-sheath sedge occurs in nearly pure stands in wet meadows at Bedford and in a few spots adjacent to common spikerush communities.

Common reed d.t. This d.t. was noted in only one spot at the south end of the lake and covered less than one-tenth acre. Reed canarygrass and sedge communities surround the stand.

Watercress/American speedwell d.t. The watercress/American speedwell d.t. was found in a small perennial stream at Bedford. These floating aquatic plants, which form dense mats, depend on cold, flowing, shallow water. Cattail and knot-sheath sedge communities border the stream.

Open water d.t. Open water dominance types include the Missouri River and other tributaries to the lake, shallow and deep water habitat of the lake itself, the waterfowl ponds at the south end of the lake, and a number of perennial ponds. The latter are often occupied by dense algal communities and to a lesser extent water milfoil.

2.4.4 Weeds

Every recreational area around the lake except those accessible only by boat, was visited during the reconnaissance. Additionally, several west side bays accessible only by boat were visited. Historic agricultural, recreational, and grazing use of the study area is evident in the presence and abundance of introduced species, particularly pasture grasses and weedy forbs. Noxious

weeds (Montana Department of Agriculture designated Category 1 weeds) appear to be present in all vegetation communities around the lake, and are particularly abundant in the mesic and riparian communities.

Noxious weeds found within the study area that may negatively impact wildlife habitat include spotted knapweed, diffuse knapweed, Russian knapweed, dalmatian toadflax, leafy spurge, whitetop, and Canada thistle. Additional weeds that do not significantly impact wildlife habitat include bindweed, hound's tongue, musk thistle, and broadleaf pepperweed.

Both current and past weed control activities are evident. Recently sprayed weeds, particularly Canada thistle and spotted knapweed were visible along roads. Past spray activity has confined most large infestations to within the shelter of surrounding willow or cottonwood vegetation. These infestations sheltered by desirable vegetation are providing a seed source for continued reinfestation of adjacent sprayed lands. The shoreline and the adjacent network of roads is so infested with a variety of noxious weeds that weed control would be difficult. This is compounded by shallow ground water as evidenced by the presence of mesic and riparian plant communities, and adjacent surface water, which limits control alternatives.

Weed populations in the study area are large and appear to be expanding based on weed mapping done in 1987 in Broadwater County (Sartorius 1988). Upland sites and roadsides are heavily populated with spotted knapweed. Diffuse knapweed and dalmatian toadflax are also beginning to invade these same locations. Leafy spurge is invading roadsides and drainages, but is largely confined to the northern half of the lake at this time. Russian knapweed, broadleaf pepperweed, and whitetop are filling a similar niche around the southern portion of the lake. Canada thistle is well established in the more mesic disturbed areas around the lake.

Additional Weedy Species

Several weedy species in addition to those previously mentioned occur around the lake. Bindweed is present, primarily in the vicinity of Goose Bay. It occupies several acres on the north shore of the bay. Hound's tongue is present intermittently throughout much of the study area, primarily in drainage bottoms. Populations are locally small (< 100 plants). Musk thistle is present in habitat similar to Canada thistle, but is not as widespread.

Sartorius (1988) reported that yellow sweetclover was sprayed as part of the Bureau of Reclamation weed control program. It is, however, planted by the DFWP for cover in the wildlife management areas (Tom Carlsen, DFWP, personal communication, 9/21/91).

Although broadleaf pepperweed is not classified as a Category 1 noxious weed, it is widespread around the lake. Broadleaf pepperweed occupies habitat similar to whitetop and Russian knapweed as was observed in the mixed infestation in Avalanche Bay, and along the east shore north of Goose Bay. It is also found on the west side of the lake in bays accessible only by boat.

Weed Control. The state's noxious weed law requires private property owners to control weeds on private land or to face penalties and potential control by the county weed district.

Reclamation controlled weeds on all of its lands until about 1987, spending \$5,000 to \$10,000 annually. After that time, DFWP became responsible for weed control on lands under its

management. (Reclamation continues to control weeds on excluded lands, including Canyon Ferry Village.) DFWP currently contracts with the two county weed control agencies; DFWP buys chemicals and the counties supply personnel. The counties use a combination of spraying and mowing to combat weeds, spraying between 50-100 acres annually.

The reliance on county weed control agencies has presented some problems for DFWP. The counties have experienced cutbacks in their own personnel over the past few years, strapping control efforts countywide. Sometimes county crews are unable to spray during the maximum effectiveness period because they are elsewhere in the respective county. However, contracted private applicator companies are not cost-competitive with the counties, so DFWP has also relied on volunteer efforts. On the east shore, a well-organized effort by cabin site owners has been supplied chemicals by the DFWP. These are limited to chemicals that do not require an applicator's license.

DFWP has become more aggressive in the past three to four years, with an FY 91 allocation of \$5,000 for weed control.

Weed control on the WMA is conducted differently. This effort is funded with Wildlife Division and Reclamation funds; Reclamation pays for chemicals and DFWP pays labor costs. In 1990, DFWP spent about \$3000 on labor (Tom Carlsen, pers. comm., 3/22/91). About \$4,000-5,000 is spent annually on weed control in the WMA with Reclamation spending \$2000-3000 (Pete Schendel, Reclamation, personal communication, 3/27/91).

Reclamation has set policy on pesticide and herbicide application. If a cabin site owner or concessionaire wishes to apply chemicals to Reclamation lands, a plan must first be submitted to and approved by the Reclamation for this activity.

2.5 WILDLIFE

The wildlife information contained in the following section was prepared by Tom Carlsen and Rick Northrup of the Wildlife Division, DFWP. For an expanded discussion, see Canyon Ferry Wildlife Management Area Management Plan, August 1992, available from DFWP.

Canyon Ferry Reservoir contributes a unique setting with its large body of water surrounded on both sides by mountains. Wildlife using the area surrounding Canyon Ferry Reservoir are an integral part of the overall experience for consumptive and nonconsumptive recreationists. Some species are sought by hunters and some by wildlife viewers. All species, however, are an indicator of the health of the environment. A good example is the recent occupation of this immediate area by two endangered species; the bald eagle and the peregrine falcon.

Wildlife tend to be mobile and may use the small zone within the study area as only a portion of their overall habitat requirements. For this reason, the wildlife study area was expanded to include a larger "buffer" zone around the reservoir representing the overall habitat of the species being considered.

In 1957, a Memorandum of Understanding (Contract No. 14-06-600-2233) was signed by Reclamation and the then Fish and Game Commission (see Management) transferring land around

the reservoir to the Commission. Lands transferred to the Parks and Wildlife divisions, respectively, can be found on Figure 7.

The reservoir provides a variety of wildlife habitats but can generally be divided into two groupings: 1) the lake shoreline and surrounding uplands and tributaries coming into the lake and 2) the south end of the lake supporting the Canyon Ferry Wildlife Management Area (WMA). These two areas are distinct in the types of habitat they provide, the species present, and past and present management.

The goal for the WMA as stated in the wildlife management plan, is to provide productive habitat for the diversity of wildlife species that utilize the area and provide for consumptive and nonconsumptive use of those resources. Since dike construction, management emphasis has been on improving habitat associated with the dike/island complex to maximize waterfowl production and to provide for hunter recreation. The area has become a popular spot for waterfowl and upland bird hunters. As vegetation communities develop over time, more nongame species are beginning to use the project. This has attracted public interest in viewing wildlife.

Management by the Wildlife Division outside the WMA has mainly consisted of constructing boundary fences (primarily on the east side of the reservoir) to control off-road vehicle travel, trespass livestock grazing, and other uses inconsistent with management for wildlife. Management emphasis has been on the WMA mainly because of the diverse opportunities that exist to develop and enhance wildlife habitats on that area. Because the land base being considered is relatively small, future development will require careful planning and cooperation among managing agencies and the private sector to ensure the viable existence of wildlife for years to come.

2.5.1 Historical Perspective

The earliest documentation of wildlife in the Canyon Ferry area comes from the Lewis and Clark Expedition. Lewis and Clark navigated up the Missouri River through this section on July 21, 22 and 23, 1805 (Lewis and Clark Journals). From descriptions provided by the Journals, a variety of wildlife species were abundant throughout the area. Species mentioned included red-headed ducks (common mergansers), sandhill cranes, Lewis woodpeckers, swans (Trumpeter swans), Canada geese, deer (no species), curlews, pheasants (probably ruffed grouse), elk, antelope, beaver, otter, bear (no species), three species of snakes, and sign of buffalo. In addition, the expedition observed big horn sheep just below the present Canyon Ferry Dam and grizzly bear just a few miles south of present-day Townsend. Deer, elk, and antelope were common along the Missouri as Clark had no trouble providing meat for the expedition from all three species.

The Canyon Ferry area has undergone major changes in habitat since Lewis and Clark first entered the region in July, 1805. The once free-flowing Missouri River has been dammed. Many of the tributaries from the Big Belt Mountains on the east side of the river and from the Elkhorn Mountains to the west that had once flowed into the Missouri River have either been diverted for historical mining purposes or for irrigation. Some of these streams are now dewatered before they reach the lake. The most recent change of this once riverine habitat began in 1973 when Reclamation constructed four dikes on the south end of the lake as a dust abatement project. This 5,000-acre project was constructed between 1973 and 1978 and is referred to as

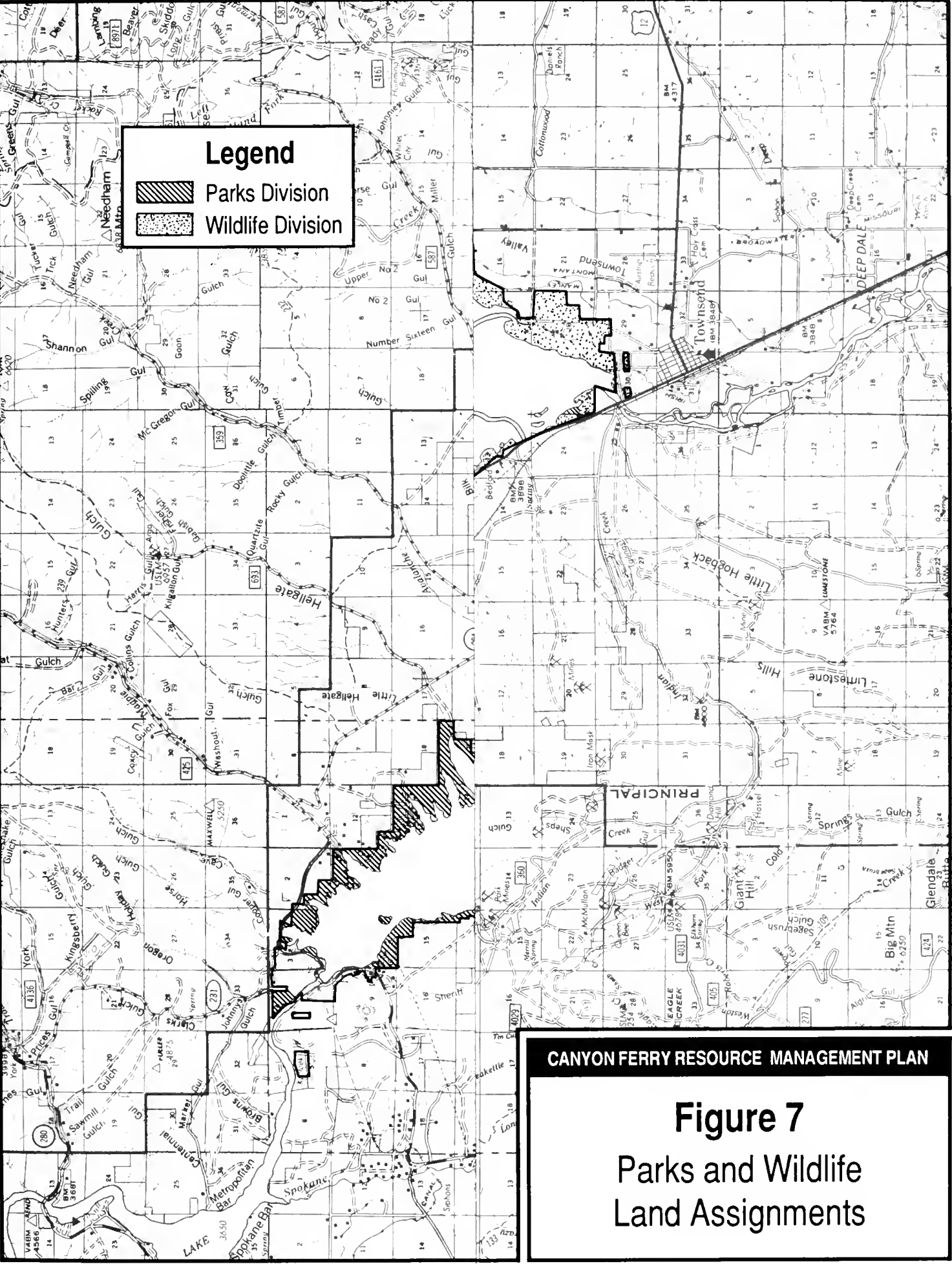
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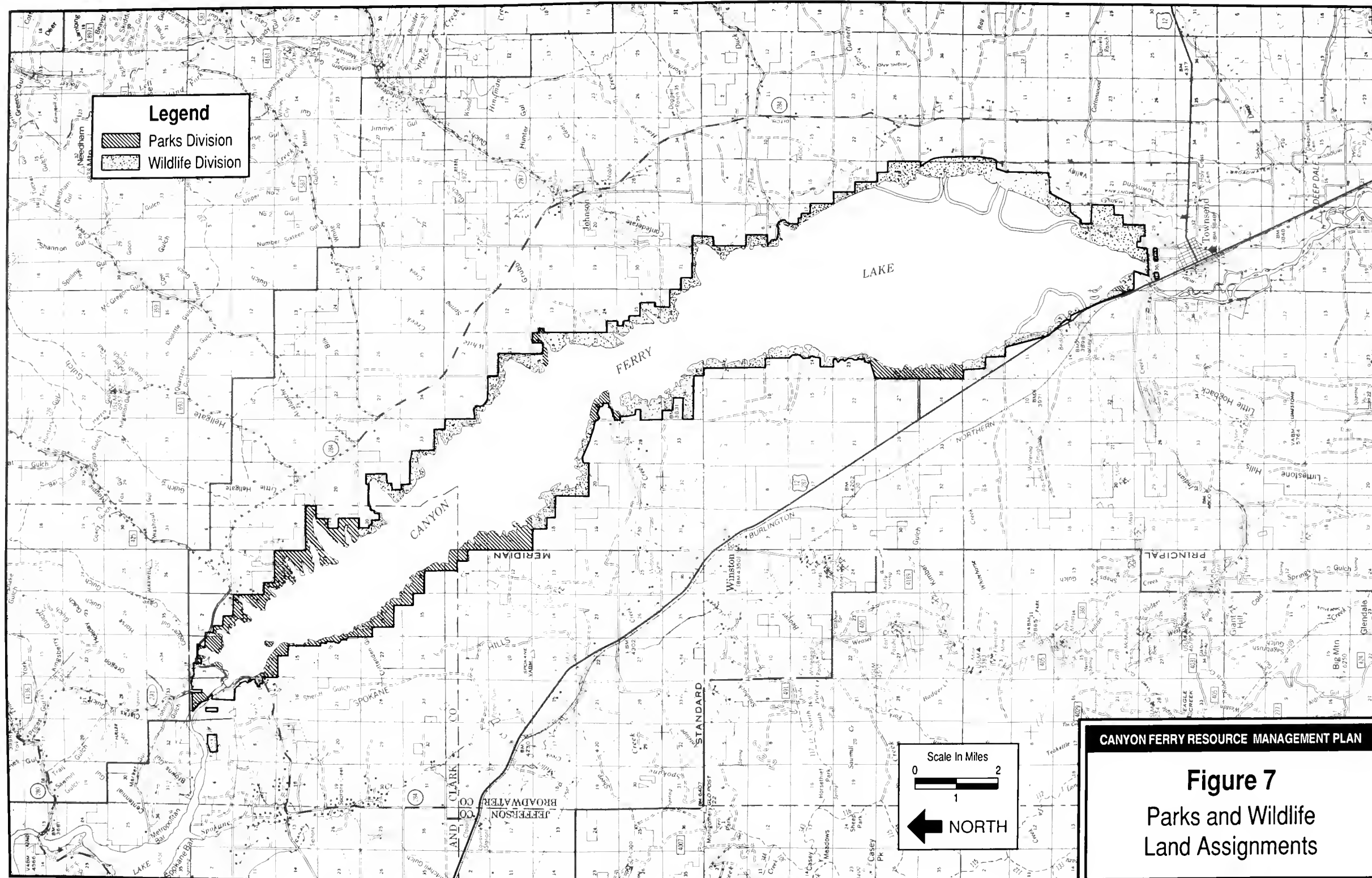
 Parks Division

 Wildlife Division

CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 7
Parks and Wildlife
Land Assignments





Canyon Ferry Wildlife Management Area. What was once a free-flowing river system with many braided channels, numerous river islands, productive river bottom habitat lined with cottonwoods, and abundant and flowing tributaries, is now a fluctuating reservoir. Human development, in the form of cabin site leases, marinas, recreation sites, housing developments, and ranching/farming around the shoreline of the reservoir has fragmented or in some cases eliminated wildlife habitats for some species. Wildlife habitat created by the dike system on the south end of the reservoir is developing into valuable habitat for a variety of wildlife species.

2.5.2 Current Perspective

Antelope

Antelope use both sides of the reservoir (see Figure 8). The area on the east side of the reservoir is a portion of Antelope Hunting District 390 while the west side of the reservoir is included in Hunting District 380. Populations in both districts were relatively low through the 1960s and began to show increases in the mid- to late-1970s. Habitat on the west side of the reservoir tends to be more continuous than on the east side and is considered more available to antelope. Habitat for antelope in both districts is comprised mainly of private land. A large portion of the east side has been put into agricultural production, fragmenting much of the habitat left in this area. Conflicts between antelope and these operations have occurred periodically in the past. Land use on the west side is primarily livestock grazing and concern by landowners over the increase in antelope numbers surfaced in the mid-1980s. Areas of public land important to antelope on the west side of the reservoir include the whole shoreline from the WMA to Beaver Creek. Areas of antelope concentration on the east side of the reservoir include Goose Bay, Avalanche Creek, and the Hellgate Gulch area.

Permit levels on antelope in both areas have been adjusted periodically to address the concerns of landowners and also to reduce the number of antelope to a level more consistent with their shrinking habitat base.

Antelope associated with the reservoir make up a portion of the total number of animals in each hunting district. To more realistically address the animals associated with the reservoir, antelope on the west side (HD 380) were divided into two groups; those east or west of Highway 287. The highway acts as a dividing line for the two main herds in this district. Based on total counts made since 1972, approximately 60 percent of antelope in this hunting district are associated with the reservoir. This currently amounts to around 250 antelope. The same holds true for antelope on the east side (HD 390) of the reservoir. Antelope here were considered to be associated with the reservoir if they occurred north of Highway 12 just east of Townsend. Since 1984, surveys indicate approximately 78 percent of antelope in this area were associated or in close proximity to the reservoir. This amounts to approximately 100 antelope.

The harvest of antelope for the period 1980-1990 has averaged 136 and 25 animals in HD 380 and HD 390, respectively. The population objective in both districts is to stabilize numbers at current levels. This appears to be consistent with the decrease in the amount of habitat that has occurred over time and the variety of land uses occurring in this area. It is imperative that current annual harvest levels occur to keep numbers in check with available habitat. Human safety in relation to hunting antelope, particularly on the west side of the reservoir, is becoming an increasingly important factor with the advent of human development. Expansion of this

Canyon Ferry Wildlife Management Area. What was once a free-flowing river system with many braided channels, numerous river islands, productive river bottom habitat lined with cottonwoods, and abundant and flowing tributaries, is now a fluctuating reservoir. Human development, in the form of cabin site leases, marinas, recreation sites, housing developments, and ranching/farming around the shoreline of the reservoir has fragmented or in some cases eliminated wildlife habitats for some species. Wildlife habitat created by the dike system on the south end of the reservoir is developing into valuable habitat for a variety of wildlife species.

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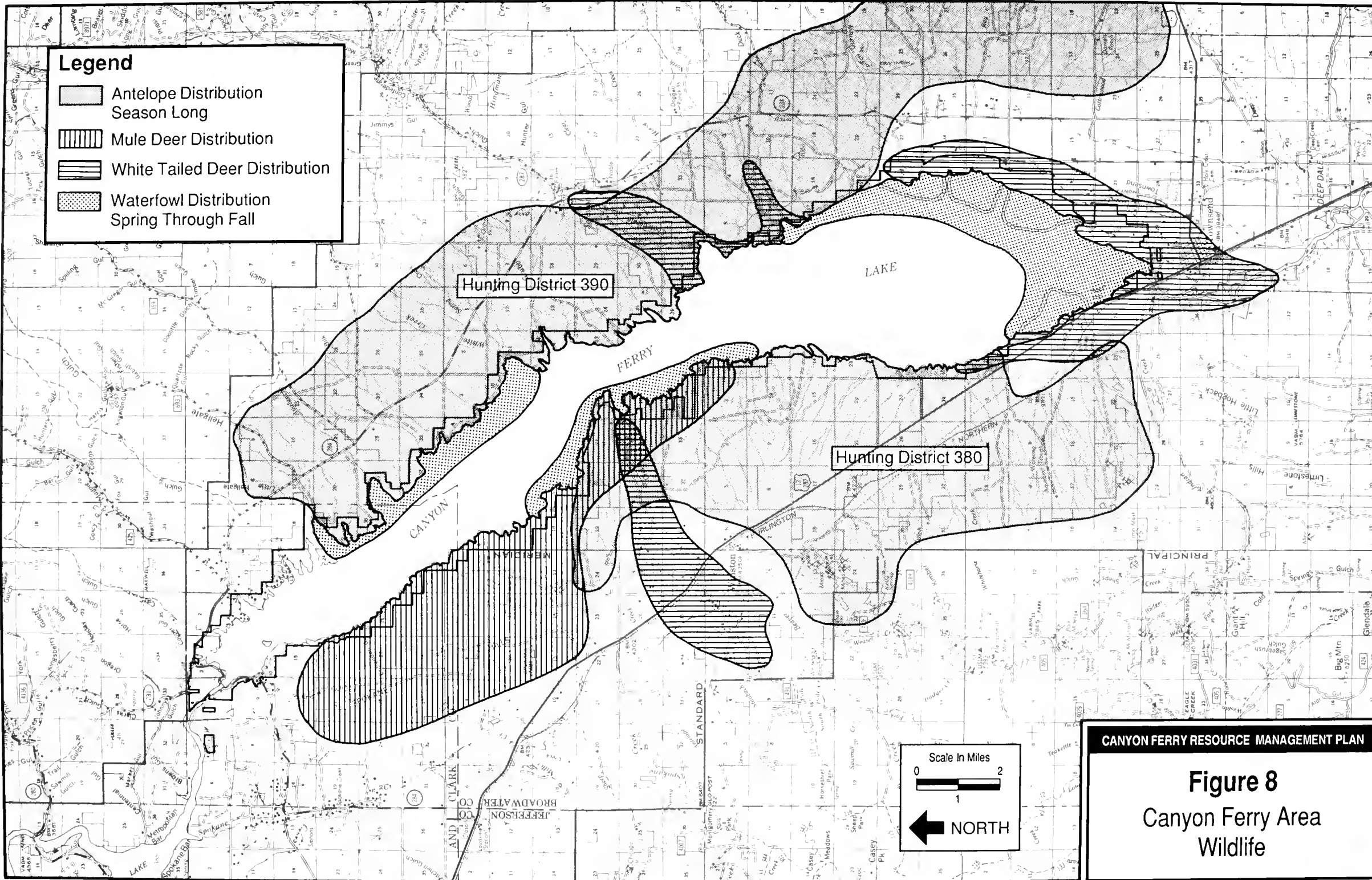
Antelope

Antelope use both sides of the reservoir (see Figure 8). The area on the east side of the reservoir is a portion of Antelope Hunting District 390 while the west side of the reservoir is included in Hunting District 380. Populations in both districts were relatively low through the 1960s and began to show increases in the mid- to late-1970s. Habitat on the west side of the reservoir tends to be more continuous than on the east side and is considered more available to antelope. Habitat for antelope in both districts is comprised mainly of private land. A large portion of the east side has been put into agricultural production, fragmenting much of the habitat left in this area. Conflicts between antelope and these operations have occurred periodically in the past. Land use on the west side is primarily livestock grazing and concern by landowners over the increase in antelope numbers surfaced in the mid-1980s. Areas of public land important to antelope on the west side of the reservoir include the whole shoreline from the WMA to Beaver Creek. Areas of antelope concentration on the east side of the reservoir include Goose Bay, Avalanche Creek, and the Hellgate Gulch area.

Permit levels on antelope in both areas have been adjusted periodically to address the concerns of landowners and also to reduce the number of antelope to a level more consistent with their shrinking habitat base.

Antelope associated with the reservoir make up a portion of the total number of animals in each hunting district. To more realistically address the animals associated with the reservoir, antelope on the west side (HD 380) were divided into two groups; those east or west of Highway 287. The highway acts as a dividing line for the two main herds in this district. Based on total counts made since 1972, approximately 60 percent of antelope in this hunting district are associated with the reservoir. This currently amounts to around 250 antelope. The same holds true for antelope on the east side (HD 390) of the reservoir. Antelope here were considered to be associated with the reservoir if they occurred north of Highway 12 just east of Townsend. Since 1984, surveys indicate approximately 78 percent of antelope in this area were associated or in close proximity to the reservoir. This amounts to approximately 100 antelope.

The harvest of antelope for the period 1980-1990 has averaged 136 and 25 animals in HD 380 and HD 390, respectively. The population objective in both districts is to stabilize numbers at current levels. This appears to be consistent with the decrease in the amount of habitat that has occurred over time and the variety of land uses occurring in this area. It is imperative that current annual harvest levels occur to keep numbers in check with available habitat. Human safety in relation to hunting antelope, particularly on the west side of the reservoir, is becoming an increasingly important factor with the advent of human development. Expansion of this

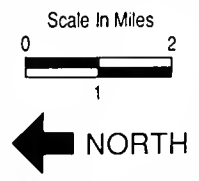


Legend

- Antelope Distribution
Season Long
- Mule Deer Distribution
- White Tailed Deer Distribution
- Waterfowl Distribution
Spring Through Fall

Hunting District 390

Hunting District 380



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 8
Canyon Ferry Area
Wildlife

development on public and private land will intensify this problem in the future. Also, increased development on public land surrounding the reservoir has the potential to displace antelope onto private land to an extent greater than what is already occurring. This would likely increase the concern on the part of the private landowners about antelope numbers. Therefore, management of public lands will play a very important role in the future of antelope in this area.

Deer

Mule deer and white-tailed deer occur almost continuously around the reservoir (see Figure 8). Both species occur in varying densities depending on habitat quality and quantity. Very little actual deer survey work has been accomplished in this immediate area for reasons mentioned earlier. Much of the area surrounding the reservoir is a prairie environment with either a sagebrush/grassland or a grassland/forb community with associated shrubby draws. In these areas deer of both species occur at low densities, typically less than five deer per square mile. Some habitats more typical of the intermountain region around the reservoir support higher densities of both species. For example, the Spokane Hills on the northwest side of the reservoir represent a situation similar to the isolated mountain ranges found east of the continental divide. Mule deer densities are higher here than in the prairie environment. During the winter of 1990-91, a helicopter survey was flown in this area and a total of 167 mule deer were observed; a density of approximately 15 deer per square mile. Likewise, riparian areas associated with major creeks entering the reservoir, characterized by a cottonwood/willow community, support densities of white-tailed deer from 5-15 deer per square mile (Woods et al. 1990). These areas also tend to have agriculture associated with them making them even more attractive to whitetails. Such areas are represented by Duck Creek and Confederate Gulch on the east side of the reservoir and Beaver Creek on the west side. Historically, much of the north end of the reservoir was probably occupied habitat for both species of deer but is now unavailable due to the amount of development that has occurred in the area. The WMA supports a high-density white-tailed deer population.

Human development has the potential to not only displace both species of deer but also to reduce the deer habitat base. Increased development also can make it more difficult to manage deer (including hunting) and can increase deer/human conflicts, primarily with agricultural interests. The public land portion of the Spokane Hills, including some BLM property, provides important winter range for mule deer in the area. It is characterized by a Douglas Fir/Juniper overstory and has a good browse component, mainly Mountain Mahogany. The draws/creeks with well-developed riparian zones provide high quality habitat for both species.

Waterfowl

Since 1961, a 13-fold increase has occurred in the number of geese observed during the nesting period in the WMA. This has been the result of nesting habitat created by the pond/island complex. The number of nests has increased almost annually, with a total of 523 nests being located in 1991. The number of nests in the delta has stabilized between 20-30 nests. An annual summer goose banding program initiated in 1974, has shown that geese produced on the WMA have traveled as far south as California and as far north as Canada.

Monitoring duck nesting has shown that ducks have responded more slowly to the WMA, primarily because they have more specific nest cover requirements, lacking on many islands, and

development on public and private land will intensify this problem in the future. Also, increased development on public land surrounding the reservoir has the potential to displace antelope onto private land to an extent greater than what is already occurring. This would likely increase the concern on the part of the private landowners about antelope numbers. Therefore, management of public lands will play a very important role in the future of antelope in this area.

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Monitoring duck nesting has shown that ducks have responded more slowly to the WMA, primarily because they have more specific nest cover requirements, lacking on many islands, and

to predation. A variety of species are located here with mallards, redheads, and gadwalls representing the most numerous. Both ducks and geese gather before spring and fall migrations in the WMA.

The remainder of reservoir mainly attracts waterfowl as a staging area during spring and fall. A limited amount of Canada goose nesting occurs around the north end of the lake where rock islands protrude above the water line. Backwaters and isolated bays provide secure loafing areas to waterfowl during spring and fall migration (see Figure 8). These areas are mainly attractive because of grain fields adjacent to the reservoir that provide a food source. Such areas include the mouths of Duck, Avalanche, and Beaver creeks. Concentrations of geese during the fall can occasionally be found in other isolated bays and shorelines around the reservoir. As with most races of Canada geese throughout North America the geese associated with Canyon Ferry Reservoir have increased over time.

While a limited amount of nesting by Canada geese occurs on the reservoir proper, certain areas provide attractive brood rearing habitat. The inlet to Beaver Creek on the west side of the reservoir is used consistently by geese for brood rearing and over 100 geese have been observed during some years. Duck Creek bay is also used for brood rearing by geese. Some of the geese using both these areas are probably birds that have nested on the WMA and moved off the project to raise their broods. As with staging areas, seclusion and minimal human disturbance make brood areas attractive. Also, succulent grass for forage is available, especially at Beaver Creek.

Mid-winter waterfowl surveys flown annually during January include the reservoir although all but the north end is typically frozen over by this time. Generally, a few Goldeneye are observed on the north end of the reservoir while just below the dam several hundred Goldeneyes, Mallards, and up to 300 Canada geese are observed.

Game Birds

Pheasants are declining on the WMA apparently due to loss of habitat, changes in farming practices, and increased predation.

Pheasants, while not numerous, occur around the reservoir where there is suitable habitat. No surveys have been conducted to quantify pheasants in this area but birds have been observed in the better riparian zones such as Duck Creek, Confederate Gulch, and Beaver Creek.

Hungarian partridge and sharptail grouse occur sporadically around the reservoir. Habitat more attractive to partridge (Weigand 1980) occurs away from the reservoir in association with grain fields on the east side of the reservoir.

Merriam's wild turkeys were transplanted into the Spokane Hills by the Montana Fish and Game Department in 1964 (10 toms and 16 hens). These birds, or their descendants, evidently moved north and a small population now exists near the town of York. A graduate study done on these birds using radio-marked birds delineated movements (Holzer 1989). Some turkeys came as far south as Cave Gulch on the north end of the reservoir. Habitat along the reservoir in this area would be considered suitable turkey habitat (ponderosa pine/grassland) however, most of this area is now cabin site leases.

Nongame Birds

A heron\cormorant rookery located on the WMA on an island in the river was deserted in 1987 for no apparent reason. Cormorants shifted nesting activities to the pond system while the fate of the herons is unknown. There are six osprey nesting structures on the WMA and generally 2 or 3 are used annually. Terns, pelicans, and avocets also use the area for nesting.

A rich variety of avian fauna also uses the reservoir. In addition, common loons and western grebes occur on the reservoir during summer months. Pelicans and cormorants can be seen fishing along the reservoir shoreline throughout the spring and summer. A variety of shorebirds are common during spring and fall migrations. To date, no specific management has been undertaken for these nongame species.

In 1990, a project funded by several agencies, sought to survey and inventory raptors along the Upper Missouri River (Harmata 1990). The survey area ran along the Missouri River watershed from Three Forks to Wolf Creek which includes the Canyon Ferry Reservoir. The main emphasis of the survey dealt with peregrine falcons and bald eagles but one of the objectives of the study was to survey and record all possible diurnal raptor and great horned owl breeding areas with emphasis on woodland raptors. The results of this survey indicate that a variety of raptors are associated with the reservoir complex (see Table 1).

Because the survey area was so large, some areas identified as potential habitat initially were not able to be surveyed. Therefore, the results of this survey are a sample only. "Occupied Territories" (OT) were areas where adult raptors occurred between 15 May and 30 August and the behavior of the birds indicated a long term presence in the area. An "Occupied Territory with a Nest" (OTN) was based on the presence of adults associated with a nest or recently fledged young. Raptors, regardless of age, not associated with a territory or nest were recorded as incidental observations (OBS).

A more complete census of osprey associated with Canyon Ferry Reservoir and the most recent intensive survey of the area was conducted by Grover (1983). A total of 52 osprey nests during the two survey years (1981-1982) combined were located. Grover also found the reservoir supported a higher density of nesting osprey (0.54 occupied nests/km) than the free flowing river portion of his study area (0.03 occupied nests/km).

A recent phenomenon regarding raptors is the large concentration of bald eagles (a minimum of 200-300) feeding on spawning kokanee salmon during October through December below Canyon Ferry Dam. The concentration of eagles has been increasing annually and concern about disturbance to the eagles has prompted the Montana Bald Eagle Working Group to develop guidelines (Hauser Lake Bald Eagle Management Strategy, In Draft) as to the future management of this event. The strategies listed in the draft deal with the "implementation of information and educational, area management, and regulation and enforcement actions designed to protect the bald eagle and the visitors desire to view them." This document, when finalized, will present the management direction for this area in relation to bald eagles. Those guidelines will be considered when developing management objectives for wildlife species associated with the reservoir.

TABLE 1.

Species and Numbers of Raptors Associated with Canyon Ferry Reservoir, 1990.
 Obs = Observed, OT = Occupied Territory, and OTN = Occupied Territory Nest.

| SPECIES | WEST SIDE RESERVOIR | | | EAST SIDE RESERVOIR | | |
|--------------------|---------------------|----|-----|---------------------|----|-----|
| | Obs | OT | OTN | Obs | OT | OTN |
| Bald Eagle | | | 1 | | | |
| Golden Eagle | | | 1 | | | |
| Red Tailed Hawk | | | | | 1 | 7 |
| Prairie Falcon | | 1 | | | | |
| Osprey | | 3 | 5 | | 1 | 5 |
| Ferruginous Hawk | 1 | | 1 | 1 | 1 | 1 |
| Swainson's Hawk | | | | | | 1 |
| Turkey Vulture | 1 | | | | | |
| Great Horned Owl | | | | | | 1 |
| Cooper's Hawk | | | 1 | | | |
| Sharp Shinned Hawk | 1 | | 1 | | | |
| Northern Harrier | 1 | 1 | | 1 | | |
| American Kestrel | 1 | | 1 | 2 | | |
| Total | 5 | 5 | 10 | 5 | 3 | 15 |

Source: Department of Fish, Wildlife and Parks 1991.

Furbearers and Small Mammals

Furbearers and small mammals have received little emphasis. Beaver are common on the WMA and provide recreational trapping along the river. Beaver in the canal system are generally removed. Otter are common in the area and trappers are discouraged. A bat house was erected along a side channel in 1992 and is monitored for use. An inventory of mammals, reptiles, and amphibians conducted by DFWP in 1983 revealed a total of 81 vertebrate species here.

No quantitative surveys of furbearers or small mammals was conducted in this area for the reservoir. Beaver are known to inhabit areas of suitable habitat which includes Duck Creek, Confederate Gulch, Magpie Creek, and Beaver Creek. Other mammals common to these same areas would be raccoons and mink. Coyotes were historically present while fox have increased with the advent of agricultural development and human control of coyotes.

Species of Special Concern

Bald eagles and peregrine falcons are the two threatened and endangered species associated with Canyon Ferry. Bald eagles have begun to nest along the reservoir as mentioned earlier in Nongame Birds. Nesting by bald eagles and peregrine falcons is likely in this area in the future as populations of these birds expands. An increased use of foraging habitat by non-breeding birds can also be expected. Radio-tagged eagles associated with the autumn concentration below the dam used areas along both shores of Canyon Ferry (Restani et al. in prep.) (see Figure 15).

Ferruginous hawks are a state species of special concern. They too rest along both sides of Canyon Ferry.

2.6 FISHERIES

Fisheries information in the following section was prepared by DFWP Region 3 Fisheries Manager staff Dick Vincent and regional fisheries biologists Ron Spoon and Mark Lere. For an expanded discussion of fisheries management, refer to Canyon Ferry Reservoir Fisheries Management Plan 1993-1998, available from DFWP.

2.6.1 Description of Existing Fishery

The species composition of the Canyon Ferry/Missouri River system is typical of large river/reservoir fisheries in the inter-mountain region. Table 2 shows the species composition and relative abundance for fish presently found in the Canyon Ferry/ Missouri River system. The sport fishery is primarily comprised of rainbow trout, brown trout, yellow perch and burbot. Other resident sport fish species, including mountain whitefish, kokanee, largemouth bass, northern pike and walleye, are not abundant enough in the system to provide for significant sport fishing opportunities. The presence of northern pike and walleye are a result of recent illegal introductions.

Nongame fish species present in the system are abundant, but not particularly diverse, with white sucker, longnose sucker, carp and Utah chub comprising the dominant species. Other nongame fish species present in the system are not particularly abundant.

TABLE 2.

Fish Species Present in the Canyon Ferry Reservoir/Missouri River System as of 1992.

| SPORT SPECIES | | NONGAME SPECIES | |
|--------------------|--------------------|-----------------|--------------------|
| Species | Relative Abundance | Species | Relative Abundance |
| Rainbow trout | Abundant | White sucker | Abundant |
| Yellow perch | Abundant | Longnose sucker | Abundant |
| Brown trout | Common | Carp | Abundant |
| Burbot | Common | Utah chub | Abundant |
| Mountain whitefish | Common | Longnose dace | Common |

| SPORT SPECIES | | NONGAME SPECIES | |
|-----------------|--------------------|-----------------|--------------------|
| Species | Relative Abundance | Species | Relative Abundance |
| Cutthroat trout | Rare | Mottled sculpin | Common |
| Brook trout | Rare | Fathead minnow | Common |
| Kokanee | Rare | Flathead chub | Rare |
| Largemouth bass | Rare | Mountain sucker | Rare |
| Black crappie | Rare | Stonecat | Rare |
| Northern pike | Rare | | |
| Walleye | Rare | | |

Note: Northern pike and walleye are present as a result of illegal introduction.

Anglers fishing Canyon Ferry Reservoir primarily seek rainbow trout and yellow perch. Based on 1992 summer creel census information, 76 percent of all anglers fishing Canyon Ferry were specifically seeking to catch rainbow trout. Yellow perch, however, gain much more popularity during the winter ice fishery. Based on 1991/92 winter creel census information, 42 percent of all anglers were specifically seeking to catch yellow perch and an additional 33 percent were seeking to catch either perch or trout. Most anglers fishing Canyon Ferry come from counties located near the reservoir. In the summer of 1992, 33 percent of all anglers were from Gallatin County, followed by Lewis and Clark (18 percent) and Broadwater counties (13 percent). About 8 percent of anglers fishing Canyon Ferry were nonresidents.

Estimates of angler use on Canyon Ferry Reservoir first became available for the 1982-83 fishing season. Additional estimates are available for the 1983/84, 1984/85, 1985/86, 1989/90 and 1990/91 seasons. In general, angler use on Canyon Ferry has declined from about 111,000 angler days (an angler day is equal to one angler fishing for 4 hours) in 1982-83 to about 61,500 angler days in 1990/91. In addition, there has been a seasonal shift in use on the reservoir toward a greater number of anglers fishing during the winter (ice-fishing).

Although a variety of factors, including water levels, algae blooms, fishing quality in adjacent waters, and weather patterns, have influenced angler use on Canyon Ferry Reservoir, trends in fishing pressure generally parallel trends in fishing quality. Since filling of the reservoir in 1955, there have been significant fluctuations in the number of rainbow trout (the primary sport fish species). DFWP has documented poor fishing success on Canyon Ferry in the mid-1960s, in the early 1980s and more recently during 1988 through 1991. Fluctuations in the abundance of rainbow trout appear to be closely associated with the varying success of DFWP's stocking program for the reservoir. Annual stocking of hatchery trout is required because natural reproduction is not sufficient to meet current demand by the fishing public. Other sport-fish species, including yellow perch, brown trout, burbot, and mountain whitefish sustain populations solely through natural reproduction.

Trends in rainbow trout abundance have been monitored in Canyon Ferry Reservoir since 1986 using gill nets and a roving creel census. Average catch of rainbow trout per gill net declined between 1986 and 1989, reflecting poor success of DFWP's stocking program. From 1989

through the spring of 1992, the average catch per gill net remained at relatively low levels. In the fall of 1992, however, the average catch per gill net increased substantially, indicating DFWP's 1992 stocking efforts were successful. Angler catch rates (number of rainbow trout caught per angler hour) determined from the roving creel census have mimicked gill net results, declining from 0.28 rainbow trout caught per hour to 0.11 rainbow per hour in 1991 and then substantially increasing to 0.34 rainbow per hour in 1992.

2.6.2 Past Management Activities

Past management activities for rainbow trout have focused on supplemental stocking of hatchery fish, habitat protection, operation of Canyon Ferry Reservoir and regulation of fish harvest. Since filling of Canyon Ferry Reservoir in 1955, the rainbow trout fishery has been maintained by stocking between 350,000 and 1.2 million fingerlings each year. An exception to this occurred in 1980 when 2 million fingerlings were planted into the reservoir, with 1 million of these fish coming from a private hatchery donation. For the 12-year period between 1981 and 1992, an average of 815,000 hatchery rainbow has been annually stocked into the reservoir.

Prior to 1990, the Arlee strain of rainbow was the primary strain of trout stocked into Canyon Ferry Reservoir. The Arlee strain of rainbow is a "domesticated" strain that is relatively short lived and is generally incapable of reproducing in the wild. Due to the Arlee's short-lived nature (about 2.5 years), periodic unsuccessful hatchery plants substantially reduced population abundance and fishing quality because only one or two additional age classes remained in the reservoir to dampen the loss of the one unsuccessful hatchery plant. In addition, biologists speculate that spawning in the small tributaries and the Missouri River has been poor in past years due, in part, to the historic use of the Arlee rainbow in DFWP's stocking program.

In past years, DFWP has adjusted the stocking program for Canyon Ferry Reservoir several times in attempt to enhance and stabilize the rainbow population. Adjustments have included changing the number and size of fish stocked, as well as adjusting the season of the year when the fish were distributed. Beginning in the early 1980s, although Arlee rainbow trout continued to dominate Canyon Ferry's stocking program, DFWP began experimenting with different strains of rainbow trout and methods of dispersal in attempt to improve the fishery. For the most part, past efforts did not consistently improve the fishery. Apparently, the historic use of the Arlee rainbow for management in Canyon Ferry has been the primary contributor to past instability in the fisheries.

For brown trout, past management activities have focused on habitat protection, operation of Canyon Ferry Reservoir and regulation of fish harvest. With a few exceptions, brown trout in the Canyon Ferry/Missouri River system have been managed as a self-sustaining population since the late 1950s. In 1983, DFWP restricted the daily and possession limit on the Missouri River from 10 pounds and one fish, not to exceed 10 fish to 5 fish, only one of which may exceed 18.0 inches in length.

Past management activities for yellow perch have focused on operation of Canyon Ferry Reservoir and on encouraging increased use and harvest by anglers fishing on Canyon Ferry Reservoir. Yellow perch is not classified as a game fish in Montana and, as a result, there are no creel limits for perch in Canyon Ferry.

2.6.3 Present Management Activities

Fisheries of Canyon Ferry, the Missouri River and associated tributaries are being managed as an ecological system. Since many species of game fish in the system do not complete their entire life cycle within any one component of the ecological unit, management considerations for any portion of the system (reservoir, river or tributaries) must be considered in the context of the entire system.

As called for in the Canyon Ferry Fisheries Management Plan, management efforts for rainbow trout are focusing on enhancing and stabilizing the population by continuing to stock wild strains of fish, experimenting with new dispersal techniques and actively pursuing rehabilitation of degraded tributaries. Tributaries are the preferred spawning and rearing habitat for both rainbow and brown trout, but virtually all tributaries in the system are impacted by a combination of dewatering, habitat degradation, and barriers to fish passage. Efforts to correct these problems were implemented on two streams in 1991 and additional opportunities are currently being identified. Tributaries of concern within Canyon Ferry State Park include Magpie, Beaver, Confederate and Duck creeks.

In 1990, DFWP dropped the Arlee rainbow trout from the stocking program for Canyon Ferry and began to stock two new strains of rainbow trout. These new strains, Desmet and Eagle Lake, are considered "wild" because they have not been genetically manipulated within the hatchery system and, as a result, are capable of reproducing naturally. In addition to their ability of reproducing in the wild, these new strains were selected because of their longer life span. The life span for Desmet and Eagle Lake is about 6 to 7 years. These longer-lived wild strains should provide more stability to the fishery because five or six age classes will be present in the reservoir instead of just two or three as with the Arlee strain. Stocking efforts in 1992 using the Desmet and Eagle Lake strains have proven to be very successful. However, it remains too early to predict if this change in the stocking program will produce a consistent, good quality fishery in the future.

Management efforts for brown trout are focusing on enhancing the population by rehabilitating tributaries to increase production of juvenile trout. Projects completed on Confederate Gulch and Deep Creek in 1991 were funded with mitigation dollars directed toward the loss of juvenile brown trout as a result of the power plant retrofit at Toston Dam. Although these two projects were specifically undertaken to benefit brown trout, they will also benefit rainbow trout reproduction. An additional project initiated as a result of the Toston Dam retrofit is the collection of brown trout eggs from the Missouri River and the hatchery rearing of juveniles. This egg collection project will continue for four consecutive years (1991 through 1994) with a goal of reintroducing a minimum of 100,000 brown trout fry to the Missouri River and selected tributaries each year.

Management efforts for yellow perch are focusing on developing and using better techniques for monitoring trends in population abundance. Although yellow perch are likely the most abundant species of fish in Canyon Ferry Reservoir, the population has fluctuated substantially in past years. Spawning success appears to be closely related spring weather conditions and/or low reservoir levels. Strong spring winds and high wave action can cause significant mortality to the eggs and newly-hatched fry. Low reservoir levels prevent the submergence of shoreline vegetation, resulting in less submerged vegetation for spawning habitat and hiding cover for

juvenile perch. DFWP is assisting local sportsmen in providing additional structural habitat for perch spawning and rearing in Canyon Ferry. This project was initiated in 1992 and is scheduled to continue for an additional three years.

Ongoing management efforts continue to address the impacts of reservoir operations on the fishery resources. Operations of Canyon Ferry Dam can have a significant impact on the fishery, wildlife, and recreational resources of the reservoir. DFWP participates in a steering committee that meets annually to review the upcoming water year and proposed dam operations, as well as to evaluate formulated operational guidelines.

Finally, DFWP is recommending that no new species of fish be introduced into the Canyon Ferry/Missouri River system over the term of the Canyon Ferry Fisheries Management Plan. Although there has been some public interest expressed for introduction of a new fish species, especially walleye, DFWP has recommended no introductions be made due to the potential adverse impacts on resident fish species within the reservoir/river system, as well as the potential adverse impacts on fish species located in downstream waters (Hauser and Holter reservoirs and the Missouri River).

2.7 CLIMATE

The climate of the study area is modified continental, influenced by Pacific Ocean air masses, drainage of cool air from the surrounding mountains, and the protection of the mountains in all directions. These modifiers make temperature changes less dramatic than those of a true continental climate.

Temperatures in the area are moderate. Average annual temperature for Broadwater County is about 43 degrees, with yearly average precipitation around 11 to 12 inches. Most of the precipitation occurs from April to October, with May and June being the wettest months. Valley snowfall is usually a little over 27 inches, although the mountains receive considerably more.

Average annual temperature for Lewis and Clark county is around 44 degrees, with average precipitation reaching 12 to 13 inches per year, as measured on the valley bottom. The mountains are cooler and receive considerably more precipitation. The valleys have normal east-of-the-divide precipitation behavior, receiving two-thirds to three-fourths of their annual precipitation during the growing seasons with seasonal peaks during May, June, and September. Snowfall is minimal in the valleys; Helena receives 25 inches per year.

According to the National Weather Service, the prevailing wind for the Helena valley area (measured from the Helena airport) is from the west, with an annual average velocity of nine to 13 miles per hour. This is considered highly representative of lake winds (Morris Wymore, National Weather Service, personal communication, 6/12/90). According to the 1976 Management Plan (DFWP), the prevailing wind over Canyon Ferry is from the southwest. Frequent storm fronts move along the slope of the mountains with high velocity winds (20 to 35 miles per hour). These winds switch direction as storm fronts pass.

According to local residents and recreation managers, there are microclimates and weather phenomena that affect distinct portions of the study area, and thus their management. The northeast shore is more wind-prone, yet sunnier and less subject to snow accumulation than the

west shore. Wind vulnerability has discouraged many of the northeast-shore residents from building boat-docks. Snow and ice removal from roads is more of a problem on the west shore.

The south end of the lake has, in the past, been subject to severe dust storms, from both cultivation and lakebed exposure to drying during low-water flow periods. This has been reduced by dikes built by Reclamation that capture water to inundate exposed lakebed. Some dust storms still occur, particularly during spring when winds are strong and cultivated fields still bare of vegetation. The south end of the lake is also subject to severe winter storms and ice accumulations, partially because the water is shallower here. Managers reported that ice flows have sheared off dock poles. The south end's windier conditions are an attraction to more experienced sailors and windsurfers, but are a management concern for providing safe mooring and water-skiing docks.

2.8 AIR QUALITY

Air quality in the study area is assumed to be typical of background levels for western Montana. Although no monitoring was conducted during the course of this study, two environmental assessments prepared within the local air basin were reviewed. These documents addressed the Continental Lime operation west of Townsend and the Chartam project at Winston.

The studies documented that there were no major sources of air pollution in the north study area. In the southern portion, the Continental Indian Creek Lime Plant contributes to the Total Suspended Particulate (TSP) levels in the immediate study area. As part of their operating permit stipulation, Continental Lime submitted four years of TSP monitoring data, from 1981 to 1984. These data showed that while there were particulate emissions, there were no violations of the Montana 24-hour standard. The company has since expanded its operation by adding another kiln, triggering the need for further monitoring.

Monitoring for the Chartam project was conducted for a year (1986), both at the mine site and at a Highway 287 site near Winston. Monitoring results showed that TSP levels were well below state and federal ambient air quality standards. Sample filters also showed low levels of heavy metals such as arsenic and lead.

The ASARCO lead smelter in East Helena may contribute minor amounts of sulfur dioxide and particulate (metals or trace elements). However, the plant's distance from the study area lessens potential air quality impacts from this source (Pat Driscoll, Department of State Lands, personal communication, 10/25/90).

Minor sources of air pollution in the study area include vehicle traffic, home heating, and mine exploration activities. On occasion, the east shore in particular is subject to dust storms due to the exposure of highly-erodible soil to winds, especially in the spring. These exposed areas include roads and plowed fields.

By the mid-1960s, the frequency and magnitude of dust storms at the south end of the reservoir prompted Reclamation to consider construction of the now-flourishing wildlife ponds near Townsend. The exposure of flats in the delta area during low water periods, combined with high winds, subjected Townsend area residents to health risks and reduced visibility from dust storms.

The state Air Quality Bureau no longer receives complaints about dust from this area (Pat Driscoll, pers. comm., 10/25/90).

In order to combat the road-dust problem both within and on access roads adjacent to the recreation sites, DFWP has applied magnesium chloride to road surfaces since about 1985. This reduces dust by holding moisture on the road surface and has proven to be increasingly effective over the application period.

2.9 SOCIOECONOMICS

2.9.1 Definition of the Socioeconomic Region

Canyon Ferry State Park attracts visitors from across the state, throughout the nation, and even from foreign countries, though most nonresidents are from the western states and western Canada. For purposes of this study, the greater socioeconomic region to be considered will include those seven counties that contributed more than five percent of total visitation (1986). Counties meeting this criterion are Lewis and Clark, Gallatin, Butte-Silver Bow, Missoula, Broadwater, Cascade, and Yellowstone. (See Recreation for visitation figures.)

When figures relating to statewide economic impacts are discussed later in this section, they are assumed to fall primarily in the greater socioeconomic region.

The more immediate economic impact area is assumed to include Lewis and Clark and Broadwater counties, and the cities and towns of Helena, East Helena, and Townsend.

2.9.2 Population

Visitor data show that the larger socioeconomic region has changed very little in the last 15 years.

Population figures for cities and counties within the region are contained in the following table:

TABLE 3.

Population for the Socioeconomic Region

| Area | 1980 | 1990 | Percent change |
|---------------|---------|---------|----------------|
| Montana | 786,690 | 799,065 | 1.6 |
| Lewis & Clark | 43,039 | 47,495 | 10.4 |
| Helena | 23,938 | 24,569 | 2.6 |
| East Helena | 1,647 | 1,538 | -6.6 |
| Broadwater | 3,267 | 3,318 | 1.6 |
| Townsend | 1,587 | 1,635 | 3.0 |
| Cascade | 80,696 | 77,691 | -3.7 |
| Great Falls | 56,884 | 55,097 | -3.1 |
| Gallatin | 42,865 | 50,463 | 17.7 |

| Area | 1980 | 1990 | Percent change |
|------------------|---------|---------|----------------|
| Bozeman | 21,645 | 22,660 | 4.7 |
| Missoula | 76,016 | 78,687 | 3.5 |
| Missoula | 34,893 | 42,918 | 23.0 |
| Butte-Silver Bow | 38,092 | 33,941 | -10.9 |
| Yellowstone | 108,035 | 113,419 | 5.0 |
| Billings | 66,798 | 81,151 | 21.5 |

Source: U.S. Department of Commerce 1990.

Many of the counties within the region are the fastest growing in the state. Population data for the larger socioeconomic region reveal that it grew, on average, at a rate equal to Montana. Total population for the region was 291,595 in 1990.

Population Projections

Figures provided by the National Planning Association⁶ show that while Butte-Silver Bow County is projected to decline slightly in population over the next 20 years, the overall socioeconomic region is projected to grow by 17 percent to a population of 341,166 by 2010. It is probable then, that Canyon Ferry will experience increased visitation over the next 20 years based on population growth alone.

2.9.3 Visitor Demographics

From the results of the following surveys, it appears that visitor demographics vary with both the season of use, and by activity (campers vs day-users). While the summer survey had a large number of respondents, both the winter and day-use surveys were administered to few visitors, and so are considered less reliable.

Summer

The Montana On-Site Recreation Survey, Summer 1986, DFWP, showed that 53.5 percent of visitors to Canyon Ferry were male, and 46.5 percent female. The greatest percentage of visitors (35.8 percent) fell into the "middle-aged" range; from 31-50. The next highest category was the "mature", 51 and older (33.3 percent).

Winter

The winter 1986/87 On-Site Survey showed that 77 percent of visitors were male and 50 percent were in the "middle-aged" range. Twenty-three percent were from 19-30 and 20 percent 51 and above.

6 National Planning Association Data Services, Inc. 1990. Regional Economic Projections Services, Demographic File, June 1991.

Day-use

The 1984 Visitor Survey (Nelson 1984) found that of 21 day-users interviewed at four day-use sites on the west shore, most were between the ages of 20 and 30 and were accompanying their children. Seventeen percent were children under five years old. The majority of visitors were employed in either health care or retail businesses.

2.9.4 Economic Impact of Canyon Ferry

Canyon Ferry State Park has net positive effects on local and state economies.

The Montana State Park System Visitor Study, prepared by the University of Montana's School of Business and Economic Research in 1989, identified three types of expenditures associated with visitors' most recent trip to a state park facility: the amount spent at a final destination, including the immediate local area; the amount spent while traveling to and from the final destination; and the amount incurred for trip preparation.

The following tables show the resident and nonresident expenditures by category and total made at the site or in nearby communities, and made elsewhere in Montana. These expenditure figures were used in calculating local and statewide economic impacts.

Statewide Economic Impact

Three categories of economic benefits from Canyon Ferry are described below. These include sales benefits from tourism, both resident and nonresident; income tax revenue from expenditures; and job benefits. These benefits occur outside the local impact area of Broadwater and Lewis and Clark counties, and primarily within the greater socioeconomic study area.

The base year of 1989 was used for visitation estimates, and resident to nonresident ratios. These are discussed in further detail in Recreation. 1989 park visitation was estimated to be 205,878 total visits (see Recreation). Twenty-five percent of visitors were estimated to be nonresident that year based on responses from about 13,000 fee envelopes.

All socioeconomic calculations are shown in Appendix C. The economic model used was The Money Generation Model (U.S. Department of Interior 1990). The model does not attempt to account for the costs associated with public service provision for park visitors. Because of this, true economic benefits are slightly less than shown here.

Sales Benefits. Total statewide sales benefits were calculated from nonresident expenditures made outside the local area. Per day expenditure multipliers were taken from Table 4.

Total sales benefits generated by nonresident use of Canyon Ferry outside the local impact area are estimated to have been about \$1,643,933 in 1989.

Tax Benefits. Additional state income taxes paid on earned income totaled about \$29,591.

Job Benefits. Expenditures attributable to Canyon Ferry generated the equivalent of about 48 jobs outside the local impact area.

TABLE 4.

1988 Visitor Expenditures Elsewhere in Montana
Montana State Parks and Fishing Access Sites
Average Per Person Per Trip

| | <u>Montanans</u> | <u>Nonresidents</u> |
|--|------------------|---------------------|
| Travel or tour "package" | \$ 2.50 | \$ 2.50 |
| Camping/admission fees and licenses for fishing, hunting, etc. | 2.40 | 1.10 |
| Vehicle registration and other fees | 10.60 | 0.30 |
| Lodging places | 7.40 | 6.80 |
| Restaurants and other eating or drinking places | 5.20 | 6.20 |
| Food, grocery, or convenience stores | 11.50 | 3.90 |
| Rentals of vehicles | 0.10 | 1.90 |
| Gas and oil, repairs and services for automobiles or boats | 15.90 | 13.30 |
| Other transportation expenses (airfare, bus fare, etc., paid in Montana) | 0.90 | 4.20 |
| Guide services or outfitters | 0.00 | 0.80 |
| Sporting equipment and supplies stores | 10.20 | 0.60 |
| Other retail stores (apparel, gifts shops, personal or other business services) | 3.90 | 3.90 |
| Entertainment and other recreation places | <u>0.20</u> | <u>2.30</u> |
| TOTAL PER PERSON PER TRIP EXPENDITURES | \$70.80 | \$47.80 |

Source: University of Montana, Bureau of Business and Economic Research, Survey of Resident and Nonresident Park Visitors, unpublished data (Missoula, MT, 1988), From: Montana State Park System Visitor Study, 1989.

TABLE 5.

Visitor Expenditures in Adjacent Areas
Montana State Parks and Fishing Access Sites
Average Per Person Per Day
1988

| | <u>Montanans</u> | <u>Nonresidents</u> |
|---|------------------|---------------------|
| Travel or tour "package" | \$ 0.10 | \$ 0.30 |
| Camping/admission fees and licenses for fishing, hunting, etc. | 0.60 | 1.00 |
| Vehicle registration and other fees | 0.60 | 0.50 |
| Lodging places | 1.00 | 4.50 |
| Restaurants and other eating or drinking places | 1.10 | 3.40 |
| Food, grocery, or convenience stores | 1.60 | 2.70 |
| Rentals of vehicles | 0.00 | 0.50 |
| Gas and oil, repairs and services for automobiles or boats | 0.80 | 2.00 |
| Other transportation expenses (airfare, bus fare, etc., paid in Montana) | 0.10 | 0.10 |
| Guide services or outfitters | 0.60 | 3.00 |
| Sporting equipment and other supplies stores | 0.30 | 0.70 |
| Other retail stores (apparel, gift shops, personal or business services) | 0.70 | 2.90 |
| Entertainment and other recreational places | <u>0.40</u> | <u>0.60</u> |
| TOTAL PERSON PER DAY EXPENDITURES | \$ 7.90 | \$22.20 |

Source: University of Montana, Bureau of Business and Economic Research, Survey of Resident and Nonresident Park Visitors, unpublished data (1988), From: Montana State Park System Visitor Study, 1989.

Local Socioeconomic Impact Area

Lewis and Clark and Broadwater counties and the towns of Helena, East Helena, and Townsend are considered to be the local socioeconomic impact area. By that definition, these are the jurisdictions that benefit the most from spin-off effects of tourism at Canyon Ferry, but are also those that feel the effects when a downturn in visitation occurs.

The Helena region has been one of population growth. Its comparative prosperity, and recent economic stability among Montana regions has been based principally on jobs in the public sector, particularly state government. In 1987, Lewis and Clark County ranked sixth in total retail trade of all Montana counties (U.S. Department of Commerce 1987).

Helena, located about 25 miles from Canyon Ferry, is the economic trade center for the surrounding area including Lewis and Clark, and northern Jefferson and Broadwater counties. The 1988 population estimate of the trade center was 61,500, with 33,663 jobs (Helena Area Chamber of Commerce 1989). Total 1989 average labor force in Lewis and Clark and Broadwater counties was 26,059 and 1,558, respectively (Montana Department of Commerce 1990). While the state grew at a rate of 3.1 percent between 1980 and 1990, Lewis and Clark County grew by 10.4 percent, mostly within the Helena Valley. East Helena lost population. Townsend, with about half of Broadwater County's population (1,635), gained modestly at 3.0 percent.

As mentioned earlier, government employment at all levels is the keystone to the stability of the area's economy. Other basic industries showing strength in the trade area in recent years are mining and ore processing, small manufacturing firms, and service industries. The unemployment rate for the Helena area in 1989 was 4.2 percent as compared to 4.9 percent for the state (Helena Area Chamber of Commerce 1989).

Of all Montana counties, Lewis and Clark ranked 5th in the state in 1988 for total personal income. Per capita income for Lewis and Clark County was \$14,195 while in Broadwater County, per capita income was \$10,642 (Montana Department of Commerce 1989).

Townsend area residents have described negative impacts on local businesses, including tackle sales and motel visitation, as fishing quality has declined in Canyon Ferry and the Missouri River upstream of the reservoir since 1986. This has generated substantial interest in improving the fishing and in developing a marina and/or other tourist facilities at the south end of the lake to boost the Broadwater County economy.

The same basic economic model was used for assessing local economic impact. Nonresident visitation was estimated to be 25 percent of park visitation in 1989 and resident visitation from outside the local impact area was assumed to be 51.6 percent of park visitation. The expenditure multipliers used for this analysis were taken from Table 4. All calculations are contained in Appendix C. Visitation figures used are for 1989. All salaries are for FY 90 except for Reclamation. These are 1991 figures but are assumed to be similar enough for use.

The Model accounts for concessions' operating expenditures for salaries, utilities, and local supply purchases as derived from park visitor spending and are part of the internal circulation of money in the local area, accounted for under indirect and induced sales.

Sales Benefits. Direct sales benefits accruing to the local impact area come from nonresident expenditures, expenditures made by Montana residents from outside Lewis and Clark and Broadwater counties, federal government salaries and operation and maintenance costs for park management, and state salaries and expenditures directly related to Canyon Ferry.

Expenditures by nonresidents are estimated to have been \$1,147,629 and by residents outside the local impact area, \$839,241, for total direct sales from tourism related to Canyon Ferry of \$1,986,870. When indirect sales are added, total sales benefits are estimated to have been \$3,178,991.

Federal government expenditures directly related to Canyon Ferry totalled \$115,250. Of this, \$59,200 was salary paid to personnel in Billings, slightly overestimating the benefits to the local economy. Total sales benefits of \$184,400 were derived from federal salaries and expenditures, again some outside the local area.

State government expenditures included salaries, and operations and maintenance directly related to the park. Total expenditures were \$599,303. Total sales benefits derived from these were about \$958,885. In addition, \$15,189 in capital expenditures were made in 1990 but are not included in the total since capital improvements have generally been nominal and sporadic.

Tax Benefits. Additional state income tax revenue benefits are derived from nonresident expenditures, and federal and state expenditures. State income taxes from nonresident expenditures totalled about \$31,425 while \$3,319 and \$172,599 were derived from federal and state expenditures, respectively.

Job Benefits. About 93 jobs were generated from tourism expenditures, five from federal, and 29 from state spending.

2.9.5 Socioeconomic Benefits Summary

The total statewide sales benefits outside the local area from tourism related to Canyon Ferry were estimated to be \$1,647,379 in 1989. Income tax benefits derived from this income are estimated to have been \$29,653. Total jobs created were estimated at 48, primarily in the greater socioeconomic study area including Gallatin, Butte-Silver Bow, Cascade, Missoula, and Yellowstone counties.

Total direct and indirect sales benefits for the local economies of Lewis and Clark and Broadwater counties, including tourism and state and federal expenditures, were estimated to be \$4,322,276 in 1990. Increased income tax revenues were about \$208,970 and 127 jobs were supported by these expenditures in the local economy.

In an attempt to allocate economic benefits between the two counties, a comparison of retail trade was conducted. According to the most recent (1987) census of retail trade published for Montana counties by the U.S. Census, total retail sales for Lewis and Clark County were \$288.4 million in 1987 while Broadwater County had sales of \$8.8 million. Therefore, Broadwater County had about 3.0 percent of the total trade that Lewis and Clark County did. A 1989 Survey of Buying Power, Sales and Marketing Management, published in August, 1989 showed that this percentage had dropped to 2.8 by 1989. While this figure could be applied to attribute overall sales, it was

felt appropriate to further refine it in relation to direct sales that would relate to recreational expenditures.

In that regard, a closer look was taken at the number, and sales volumes of certain types of businesses that could be recreationally-related. In the categories of general merchandise, food stores, gas stations, apparel, eating and drinking, and miscellaneous retail, Broadwater County had 17 businesses in 1987 out of a total of 24. Lewis and Clark County had 312 establishments in these categories out of a total of 402.

Sales attributable to these types of businesses were \$5,703,000 in Broadwater County (this did not include categories for which there were so few businesses that information remained proprietary), and \$208,234,000 in Lewis and Clark County. By comparison then, for sales directly related to recreational expenditures, Broadwater County had 2.7 percent of the trade that Lewis and Clark did. For indirect sales, the figure is probably closer to 3.0. Therefore, to allocate sales-based benefits between the two counties, it was assumed that Broadwater County had 2.8 percent of combined direct and indirect sales that Lewis and Clark did.

Carrying this over, it can be projected that benefits from Canyon Ferry were distributed in the following way:

TABLE 6.

Distribution of Benefits
between Lewis and Clark and Broadwater Counties
1989

| | <u>Lewis and Clark</u> | <u>Broadwater</u> |
|-------|------------------------|-------------------|
| Sales | \$4,201,252 | \$121,024 |
| Taxes | \$203,119 | \$5,851 |
| Jobs | 121 | 6 |

2.9.6 Employment

Public employment directly related to Canyon Ferry State Park is as follows: The DFWP maintained about six Full-Time Equivalent (FTE) positions at Canyon Ferry in 1990. This included one park manager, one maintenance supervisor, .7 manager's assistant, two-.7 position seasonal rangers, .65 assistant maintenance position, .5 maintenance, two-.33 maintenance, .33 fee collector, three-.33 resident caretakers, and .33 FTE for seasonal rangers.

In addition, Region 8 supervisorial employment directly related to Canyon Ferry management included the following FTEs: .5 parks manager, .25 secretary, and .33 regional supervisor. Other DFWP personnel assigned to Canyon Ferry included 1.58 FTEs for wildlife management, 1 FTE for enforcement, and 1.93 FTEs for fisheries management.

Reclamation maintains between 18 and 21 FTEs for the total operation of the Canyon Ferry Project. Of these, 2.31 are directly related to park management.

Indirect (private) employment is accounted for in the previous sections under jobs benefits.

2.9.7 Fiscal Analysis

Revenues

Canyon Ferry has generated only 50 percent of necessary revenues for park operation over the last decade. Revenues generated at the state park have supported it anywhere from a high of 91 percent in FY 1989 to a low of 28 percent in 1984. In 1989, entrance fees were initiated, accruing new revenue for the park, and no capital expenditures were made. In 1984, capital expenditures were the highest of any over the period.

Revenues for the operation of Canyon Ferry are generated on site by entrance and camping fees, group use fees, other miscellaneous charges, cabin site leases, and concessions fees. Cabin site fees have provided the majority (56.3 percent) of Parks Division budget for Canyon Ferry. Reclamation has supplemented the Canyon Ferry budget in the areas of capital improvements, health and safety, planning, and weed control.

Table 7 shows historical Parks Division expenditures for Canyon Ferry. A rise in camping fee totals is due both to increases in visitation and increases in fees. Annual concessions fees are based on gross revenue and hence have fluctuated with visitation. In 1988, cabin site fee increases were phased in. Group use fees remained fairly constant over the period. Other fees include all miscellaneous receipts (e.g., firewood sales).

Entrance Fees. The subject of entrance fees, their level and end-use, has been the focus of much controversy and study. The initiation of entrance fees is indicative of the Parks Division's difficulty in meeting recreation facility demands. In 1990, the Parks Division received revenue from only three sources: parks-earned revenue (36 percent), coal tax (36 percent), and motor boat fuel taxes (28 percent). Since the 1991 Legislature, the Parks Division has received five to six percent of its budget from the general fund. It is ranked 48th in the nation in spending per visitor, and has the second smallest staff in the nation. Our state has proportionately less total area devoted to state parks than any other state but North Dakota (Montana Department of Fish, Wildlife and Parks 1990b).

Paying fees for use of state park facilities is not a new concept; as early as 1939, the state was charging an entrance fee at Lewis and Clark Caverns. Camping fees were charged at Canyon Ferry at some sites as early as 1969 (Don Hyypa, DFWP, personal communication, 1/22/90). By 1984, an entrance fee was being charged at Lake Elmo, and Yellow Bay and Wayfarers at Flathead Lake were fee use areas. In 1985, eighteen other campgrounds around the state became fee areas, including some additional sites at Canyon Ferry.

Prior to 1989, DFWP was authorized "to levy and collect reasonable fees or other charges" to "be deposited in the state treasury in a state special revenue fund to the credit of the department" (Section 23-2-105, MCA). In 1989, DFWP initiated a statewide policy of charging park entrance fees at the rate of \$12 for an annual park passport, \$2.00 per vehicle and \$.50 per walk-in visitor. In 1991, fees were raised to \$15 for an annual park passport, or \$3.00/visit for a daily fee. Camping fees were raised to \$7.00 to \$8.00/night including the day use fee, or \$4.00 to \$5.00 per night with an annual passport.

TABLE 7.

Historical Revenue and Expenditures (a) for Canyon Ferry

| | FY 81 | FY 82 | FY 83 | FY 84 | FY 85 | FY 86 | FY 87 | FY 88 | FY 89 | FY 90 |
|--------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| REVENUES | | | | | | | | | | |
| Camping Fees | \$16,854 | \$14,049 | \$27,925 | \$24,955 | \$28,243 | \$17,599 | \$18,676 | \$34,462 | \$35,326 | \$39,626 |
| Concession Fees | 5,650 | 6,196 | 3,317 | 3,521 | 4,930 | 5,268 | 7,628 | 7,626 | 7,856 | 7,138 |
| Cabin Site Rentals | 27,820 | 30,865 | 34,275 | 38,745 | 42,945 | 47,970 | 51,240 | 69,830 | 86,353 | 99,680 |
| Group Use Fees | 4,740 | 3,880 | 4,850 | 3,430 | 4,559 | 4,898 | 5,119 | 3,080 | 4,489 | 7,977 |
| Entrance Fees | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,550 | 14,560 (b) | 33,988 |
| TOTAL REVENUES | \$55,064 | \$54,990 | \$70,367 | \$70,651 | \$80,677 | \$75,735 | \$80,663 | \$116,548 | \$148,584 | \$188,409 |
| EXPENDITURES | | | | | | | | | | |
| Operations Budget | | | | | | | | | | |
| Personal Services | \$44,053 | \$46,155 | \$58,313 | \$63,340 | \$78,545 | \$102,605 | \$104,511 | \$104,044 | \$102,294 | \$130,836 |
| Operations | 37,845 | 41,603 | 42,684 | 47,330 | 52,940 | 64,274 | 64,947 | 55,809 | 50,617 | 116,746 |
| Equipment | 0 | 2,129 | 0 | 216 | 260 | 10,874 | 615 | 0 | 0 | 1,388 |
| TOTAL O&M | \$81,898 | \$89,887 | \$100,997 | \$110,886 | \$131,745 | \$177,753 | \$170,073 | \$159,853 | \$152,911 | \$248,970 |
| Cabin Sites | \$17,953 | \$9,550 | \$13,784 | \$20,496 | \$20,174 | \$22,909 | \$21,638 | \$39,735 | \$10,103 | \$8,675 |
| Concessions | 3,012 | 1,713 | 3,324 | 1,341 | 6,344 | 2,013 | 2,530 | 2,937 | 464 | 3,120 |
| Fee enforcement | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 663 | 5863 |
| Weeds | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,999 | 0 | 0 |
| SUB-TOTALS | \$102,863 | \$101,150 | \$118,105 | \$132,723 | \$158,263 | \$202,675 | \$194,241 | \$204,524 | \$164,141 | \$266,628 |
| Canyon Ferry Management Plan | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$130,000 (c) |
| CAPITAL BUDGET | | | | | | | | | | |
| Capital Canyon Ferry | \$0 | \$0 | \$14,767 | \$117,059 | \$31,085 | \$2,500 | \$0 | \$0 | \$0 | \$15,189 |
| TOTAL EXPENDITURES | \$102,863 | \$101,150 | \$132,872 | \$249,782 | \$189,348 | \$205,175 | \$194,241 | \$204,524 | \$164,141 | \$281,817 |
| EXPENDITURES - REVENUES | \$47,799 | \$46,160 | \$62,505 | \$179,131 | \$108,471 | \$129,440 | \$113,578 | \$87,976 | \$15,557 | \$223,408 |

Source: DRWP SHAS reports, David Clark - Snustad, Debitte Check 1/27/91 pers. communications

a) These expenditures include only Park Division and Region 8 expenditures. Fisheries, wildlife and enforcement personnel and operations budgets are spent in addition to these totals. (See socioeconomic calculation, Appendix C.)

b) Fee collection started in calendar year 1989. Fees collected from May 15 through June 30, 1989.

c) Canyon Ferry Management Plan, a one-time expenditure spread over three years. Parks Division expenditures without study were \$93,408 for FY 90.

Group-use fees at Canyon Ferry are:

| | | |
|-----------------|-------|-----------------------|
| up to 30 people | \$25 | \$20 cleaning deposit |
| 30 to 49 | \$50 | \$50 |
| 50 to 100 | \$75 | \$100 |
| 101 to 200 | \$100 | \$200 |

A variety of collection methods has been considered for Canyon Ferry. Caretaker-collected and self-pay systems are currently used. Personal contact by fee collectors is no longer necessary since decal or entrance passes are checked at the vehicle and those lacking passes are ticketed. These two improvements have addressed some of the concerns voiced at public meetings. Annual camping passes will not be initiated. Based on the experience of other states in the region, they would have to be very expensive to generate the same revenue that individual pass fees do (Doug Monger, DFWP, personal communication, 2/20/91).

Entrance fees are not consistently charged at the concessions. At Goose Bay, the entrance fee is levied on the access road entering the area. At Kim's Marina, no fees are charged. At Yacht Basin, fee collection is complicated by the fact that the recreationist enters the area on private lands.

Department staff has concern over consistent charge and collection of fees. For instance, at Goose Bay, entrance fees but no camping fees are charged because of a DFWP policy that camping fees aren't charged unless both water and sanitary facilities are made available. There is no water supply at this site. The result is that the fee system in combination with this policy has pushed some campers to the more undeveloped and less-managed sites, causing public health and environmental concerns.

Cabin Site Fees. In 1988, cabin site fee increases were approved by the Fish and Game Commission amidst much controversy. New fees are still being phased in. As leases come up for renewal, they are subject to a new fee basis: five percent of 75 percent appraised value with a minimum fee of \$340. Appraisals of the lease sites were conducted in 1987 (Anne Renaud, DFWP, personal communication, 2/28/91).

Concessions. Concessions leases are renewed on a ten-year basis, at which time fees may be renegotiated. Current lease fees range from 1.5 to 6.0 percent of gross revenues. The Parks Division is preparing a statewide concessions policy that will eventually make these fees consistent.

Parks Division Funding. In 1989, when commitments were made to the public, Reclamation, and the legislature to upgrade management at Canyon Ferry, entrance fee revenue was projected to cover much of the anticipated expense of management. Fee revenues fell well short of anticipated levels but the DFWP continued subsequent management at levels committed to. The DFWP was then forced to cut other improvements and programs.

In 1990, DFWP estimated immediate capital needs at Canyon Ferry at \$3 million with an accompanying need for an additional \$150,000 to \$200,000 in annual operations budgets to maintain the new facilities. DFWP recognized that this management plan might suggest even

higher capital and maintenance costs. Anticipated increases in entrance fees are not expected to cover the proposed operations and maintenance budget, much less increases in capital budgets.

The Parks Division currently has three primary sources of funding for operations and maintenance; parks earned revenue, coal tax trust funds, and motorboat fuel taxes. Capital expenditures come primarily from coal tax, recreational vehicle fees, and Land and Water Conservation and Dingell-Johnson funds.

Federal funds for special projects related to fisheries and motor boats are passed through to the Parks and Fisheries divisions. These funds are collected as a nationwide tax on sporting equipment and are often referred to as Dingle-Johnson monies. The state received \$4.2 million in FY 91 from this source that must be matched by 25 percent state money. Eligible projects have included fishery research, fish hatchery construction, and fishing access construction. At least ten percent of these funds must be spent on motor boat access improvements. These funds have been used extensively at Canyon Ferry in the past (Bobbi Balaz, DFWP, personal communication, 2/22/91).

Federal Land and Water Conservation funds have been invested at Canyon Ferry, but have been cut substantially over the past five years. Eligible projects include recreation development and acquisition, and enhancement of wildlife habitat. There is a 50 percent state match required for these funds. The state received only \$271,000 from this source in FY 91 (Mary Ellen McDonald, DFWP, personal communication, 2/22/91).

In 1992, Congress lifted Reclamation's \$100,000 capital spending cap, providing for federal cost-sharing for operation and maintenance, and replacement.

Reclamation Contributions. Between 1961 and 1990, Reclamation contributed \$80,425 towards capital improvements for health and safety and recreation development costs. Between 1990 and 1992, the agency has committed to an additional \$80,000 cost-share with the state for capital improvements, and \$150,000 for a reservoir management plan. Over the years, Reclamation has also contributed money towards weed control.

Expenditures

Personal services (salaries) costs rose from 1981 - 1990 although employment has not increased greatly due to limited funding. Operations costs rose very gradually over the period until FY90 when the legislature directed DFWP to infuse more money into operations. Equipment purchases have been minimal, indicating a real need for the park. Other than minor purchases, replacement of equipment has not been funded (Patrick Gubbins, DFWP, personal communication, 8/13/91). In addition, an average of \$175,000/year has been spent since 1985 to stock fish in Canyon Ferry.

Other DFWP divisional expenditures for Canyon Ferry include those made for enforcement on land and water, fisheries management and stocking costs, wildlife management, and land management personnel for the cabin sites.

Cabin site and concessionaires expenditures have included primarily road maintenance and improvements. Beginning in 1989, a new expenditure column appears (Fees) that reflects the cost

of implementing the fee entrance system. The only separate accounting figure shown for weed control was \$1999 in FY88, although in actuality \$3000 to \$5000 had been spent on weed control annually by DFWP since 1986 as part of the operations and maintenance budget (Tom Campbell, DFWP, personal communication, 2/21/91).

Capital budgets totaled \$180,000 over the ten-year period from FY 1981 - 1990.

2.9.8 Public Services

Law Enforcement

Law enforcement on and around the lake is a cooperative effort of three agencies. Lewis and Clark and Broadwater County sheriff departments enforce the law in their respective counties around Canyon Ferry. DFWP has had a ranger program in effect since 1985. However, the agency did not receive authority to enforce park regulations until 1991, when a peace officer program was initiated. In addition, game wardens enforce fish, game, and boating regulations, and park regulations if necessary. DFWP also contracts with the county sheriff departments during holidays and special events.

Jurisdictional confusion over law enforcement was expressed at public meetings. This confusion is furthered because the Montana Highway Patrol is also responsible for law enforcement on certain roads in the area.

Fire Protection

The official fire season is from May 1 until September 30, although this has been extended when fire conditions warrant. All public lands around Canyon Ferry are covered by an interagency fire agreement during the official fire season. Signators are the USFS, Department of State Lands, and BLM. Fire personnel and equipment are dispatched from the Interagency Fire Center north of Helena. Depending on the fire conditions and severity of the fire, response time can be as short as five minutes by helicopter or up to 20 minutes by fire engine. Since 1991, park rangers have also been made fire marshals, trained in leadership skills.

The interagency team automatically responds to all fires within the area but is responsible only for wildfire suppression. Structural fires are fought by the Canyon Ferry Volunteer Fire Department in Lewis and Clark County, and Broadwater County Volunteer Fire Department. The interagency team assists in structural fires from the outside and provides water supply when necessary (Mike Ness, Department of State Lands, personal communication, 3/18/91).

In 1991, at the request of the Canyon Ferry Volunteer Fire Department, Lewis and Clark County Commission created the Canyon Ferry Fire Service Area. The Fire Service Area is funded by assessments on structures that have an assessed value of \$50 or more. For fiscal year 1992, those assessments are expected to generate about \$21,850. The Department has also begun to assess fire suppression costs to DFWP on their managed lands. Volunteers are contacted by the county sheriff's office and have a telephone calling system in case of fire. Equipment includes three pumper trucks ranging in size from 300 to 1,000 gallons, and two float pumps that can draw water from surface sources (Orville Johnson, Yacht Basin Concession, personal communication, 4/5/91).

Equipment is currently housed across from Jo Bonner Campground at Magpie Bay, but the department wishes to build a new station on Reclamation lands, directly southwest of Yacht Basin concession. The fire department and Canyon Ferry Recreation Association (CFRA) have conducted substantial fundraising towards station construction. A station would require the approval of DFWP and Reclamation, both of whom support the review of the proposal within the context of this plan.

Broadwater County Volunteer Fire Department is paged out of the county sheriff's office. It has satellite stations at Winston and Duck Creek around the lake, and at Toston and Radersburg that can serve as backup. The county's main piece of fire equipment is a 10,000-gallon tanker truck (Bob Davis, Broadwater County Commissioner, personal communication, 4/3/91).

All persons using forested lands in Montana are required to carry a shovel and bucket within their vehicle. They are also required to have a burning permit issued by the appropriate county prior to any open burning during the official fire season.

Sewage Disposal

Aside from a community sewage treatment system at Canyon Ferry Village, all domestic sewage disposal at Canyon Ferry is handled by septic tanks and drainfields. Outhouses, with sealed tanks requiring pumping and disposal, are the method of sewage disposal used at the recreation sites, with the exception of the flush toilet at Hellgate. DFWP has provided one public dump station for recreational vehicles located at Kim's Marina. This station was planned at Ponderosa but the DFWP could not afford the access road necessary to serve the site. There is also a private dump station at Goose Bay for which there is a charge.

The use of septic tanks and drainfields at the cabin sites has been a lingering concern of the Lewis and Clark County Health Department. Small lot sizes don't meet current state minimum lot-size standards and are often too small for replacement drainfields. Underlying geology also limits this method of disposal (see Water Resources and Quality). The cabin site lessees have expressed interest in finding off-site replacement areas for those sites experiencing problems. The DFWP may install another dump station on the north shore as funds permit.

Water Supply

Water supply is provided by well and hand pump at recreation sites. There is a water pressure system for the bathroom at Hellgate, and for irrigation at Silos. Canyon Ferry Village and Riverside receive their water supply from surface water treated by sand filters at the powerplant.

State regulations being enforced by Lewis and Clark County Health Department starting in 1991 had the effect of changing two camping sites to day-use areas. The regulations require both available toilet and potable water supplies at all tourist campgrounds. Fish Hawk and Overlook on the west shore do not have water supplies (see Recreation). Goose Bay and Confederate sites in Broadwater County have become "pioneer" campsites where self-contained units will be required in designated areas, camping fees will not be charged, and length-of-stay limits will be enforced (Patrick Gubbins, pers. comm., 12/8/92). No fires will be allowed and all garbage must be packed out.

Solid Waste

There are two components of solid waste removal at Canyon Ferry; garbage transport and disposal. This has been confusing for many people. Garbage transport is provided to DFWP, Reclamation, and some of the cabin site owners by a private vendor; City-County Sanitation. Dumpsters are leased, and a monthly fee paid for weekly pick-up. Some residential owners choose to haul their own garbage to the respective county landfills.

All businesses and households in the Lewis and Clark County portion of the study area are also included within the Scratchgravel Refuse District, and are assessed a fee to cover disposal costs of their solid waste. This fee is \$36 per year.

Safety Considerations

There are safety issues related to recreation, traffic, fire protection, and law enforcement at Canyon Ferry. Since other sections of this report will address the latter three topics, this section will cover water-related safety concerns.

Safety issues on Canyon Ferry Lake are related to motorboating, jet skis, sailing, fishing, sailboarding (windsurfing), swimming, and conflicts between these different recreationists. As the use of Canyon Ferry increases, so will the opportunities for conflict.

According to DFWP staff, many safety problems stem from the fact that recreationists tend to ignore posted safety regulations at the lake. For example, fishing is not allowed on the dam structures, and several areas below the dam are closed to fishing due to dangerous currents and undertows. When anglers fish in these closed areas, safety problems can occur.

Other hazards occur when motorboaters fail to yield right-of-way or ignore posted no-wake or swimming areas. No-wake areas are intended to protect property within marinas on the lake. Six areas on the lake are buoyed off as swimming areas. Boaters often infringe on these, creating a major safety problem. DFWP issues tickets to boaters who encroach on posted swimming areas, and fines, as high as \$500, are set by the courts.

Safety of users and vehicles is often impaired because ice-anglers don't assess ice conditions prior to driving onto the frozen reservoir. Since 1986, one or two vehicles per year have fallen through the ice (Mark Lere, DFWP, pers. comm., 1/22/93).

Conflicts between sailboarders and other recreationists also create safety concerns. Because sailboards are not classified as vessels, no right-of-way regulations (or other Rules of Operation) apply. Novice sailboarders can be capsized by motorboat wakes if boats come too near. There have been increasing numbers of close encounters between motorboats and sailboarders. Sailboards are particularly difficult to see when they capsize. Some novice sailboarders choose swimming areas to learn sailboarding. This can create a hazard for swimmers, since it's difficult for novices to control their boards.

Drunken boating occurs on the lake and has the potential to be a major problem as boating use increases. Boaters are not always aware that several hours in the hot sun can physically impair a boater just as can alcohol. Drinking even a small amount of alcohol magnifies this effect.

Wind and storms create a safety problem for boaters and swimmers. Swimmers can drift offshore in high winds. High winds and storms can capsize boats and cause groundings. Small boats and night anglers are in special danger in these conditions. In some instances, when boats or sailboards are caught in severe storms, search and rescue efforts can be life-threatening to rescuers.

High winds at the south end of the lake, near Silos, attract many sailboarders. Since few motorboaters use that end of the lake, sailboarders who get into difficulty with sudden storms have less chance of being rescued.

Most sailboarders don't wear lifejackets because they restrict movements and can, in some instances, endanger the sailboarder, according to John George, owner of Big Sky Windsurfing in Helena. (Because a sailboard is not classified as a vessel, lifejackets are not required unless the sailboarder is under 15 or there are two people on the board, in which case both must wear a lifejacket). In 1990, a near-drowning occurred at the Silos area involving a novice sailboarder who was caught in a sudden high wind without a lifejacket. George believes that safety problems at the south end of the lake could be alleviated if DFWP posted signs warning of sudden high winds and notified people that the area is suitable for advanced sailboarders only. DFWP enforcement personnel believe that lifejackets should be worn by sailboarders since advance warning is not always possible.

If severe weather is reported, the Department radios personnel at the lake, who try to relay information to recreationists. DFWP also tries to educate people to watch the weather and to be aware of changes that might indicate an approaching storm. The National Weather Service and DFWP have discussed formulating an advance warning system for high winds; however, warning everyone on a lake the size of Canyon Ferry would be difficult.

DFWP has conducted a public education program on safety since 1973. Department personnel present safety programs to groups and talk to individuals at Canyon Ferry. In addition, a DFWP employee runs a water safety education program, including safety-related news releases and TV announcements.

Water-related accidents have been kept to a minimum partially due to enforcement. There have been about 30 water-related deaths at Canyon Ferry since 1975. The number of deaths and injuries has decreased over the past 10 years due to education and enforcement (Eugene Hurlbert, DFWP, personal communication, 12/10/90). Three enforcement agencies work in cooperation to patrol the area: state DFWP wardens on both land and water, and Lewis and Clark and Broadwater county sheriff departments on land. The U.S. Coast Guard has authority to enforce federal boating laws, which are similar to the state's. They may also conduct courtesy boat inspections (Elmer Davis, DFWP, personal communication, 8/15/91).

As part of the DFWP boat safety program, boats are inspected for all safety equipment and use is terminated if the vessel does not meet proscribed standards. Only a few boat hazards in main traffic areas have been marked under the private-aids-to-navigation regulations and in cooperation with the CFRA.

A permit must be obtained from the Coast Guard for sanctioned activities such as regattas or races. Permits must also be obtained from DFWP for organized group activities.

Health Considerations

Lewis and Clark County Health Department is aware of people using water directly out of the lake and recommends against drawing water from the Missouri River system for culinary purposes. This practice is believed to increase health risks from relatively high arsenic levels, the intermittent occurrence of toxic algae blooms, and other possible contaminants.

Boaters sometimes lack toilet facilities once they are on the water. The result is that raw sewage is dumped overboard.

Emergency Services

Ambulance services are available from both St. Peter's Community Hospital in Helena, and Broadwater Health Center in Townsend. Although there is no official policy in place, the park manager stated that St. Peter's is usually called in case of an emergency because it has a broader spectrum of treatment facilities. (Also see Communications.)

Schools

In Lewis and Clark County, elementary students are served by School District #9 in East Helena. High school students are bused to Helena High School.

School buses travel as far as Jo Bonner to pick up students, stopping at Canyon Ferry Village, Riley's, and Jimtown Road.

In Broadwater County, students attend Broadwater County High Schools and Townsend Elementary, both in Townsend. School buses travel on the east side of Canyon Ferry (Highway 284) turning around at Goose Bay, and along the west side (Highway 287), turning around at the Broadwater County line (John Ryan, School Superintendent, personal communication, 3/28/91).

Buses in both counties generally travel between the hours of 7 and 8 a.m. and 3 and 4 p.m.

Communications

The lack of a good communication system at the lake is sometimes acutely felt. Particularly during summer periods when use is high, or emergency phone calls cannot be answered, or the party in question cannot be reached.

There are five telephones (three of these are radio phones) available to the public at the caretakers' facilities located at Hellgate, Ponderosa, Silos, White Earth, and Chinaman's. There are also pay phones at the private concessions, but not at public campgrounds. The phone companies are reluctant to provide pay phones in remote areas where use is low and potential for vandalism is high.

Staff communications with each other are carried out by car radio. DFWP staff is considering the use of cellular phones or high band radios to improve communications between the north and south end of the lake, and between enforcement personnel.

Mosquito Control

The Broadwater County Extension Agent contracts with Reclamation for mosquito control. Mosquito control is carried out on 400-600 acres of the delta south of the WMA, and only when there is full pool so that low-lying areas are flooded.

The contractor is required to submit a pesticide use proposal to Reclamation and currently uses a variety of control methods including aerial spraying, the submergence of a biological larvacide, and "fogging" of adults mosquitos. Reclamation has requested a mosquito control plan from the contractor.

Utilities

Montana Power Company supplies power to the park except for at the dam and powerhouse, and Canyon Ferry Village. Here, power is supplied by Reclamation.

Electricity is available at Ponderosa/Court Sheriff, Hellgate, Silos, Chalet, and to cabin site residents on the West and East Shore roads. Electricity could easily be made available to Jo Bonner because of recent line improvements made by MPC (Tom Campbell, pers. comm., 9/4/91). Supplying power to Riverside would be cost-prohibitive at present because about a mile of power line would have to cross private property (Patrick Gubbins, pers. comm., 12/4/91).

2.10 LAND USE AND OWNERSHIP

2.10.1 Current Land Use

The land use study area includes all Reclamation lands and adjacent parcels whose use could significantly effect, or be affected by public use.

Although the ballfields and golf course located at the south end of the reservoir near Townsend are on Reclamation lands, they are considered autonomous and as such, are not included in the study area. These lands are leased to the City of Townsend, are not managed by DFWP, and do not influence Canyon Ferry management (Rick Blaskovich, Reclamation, personal communication, 9/9/91).

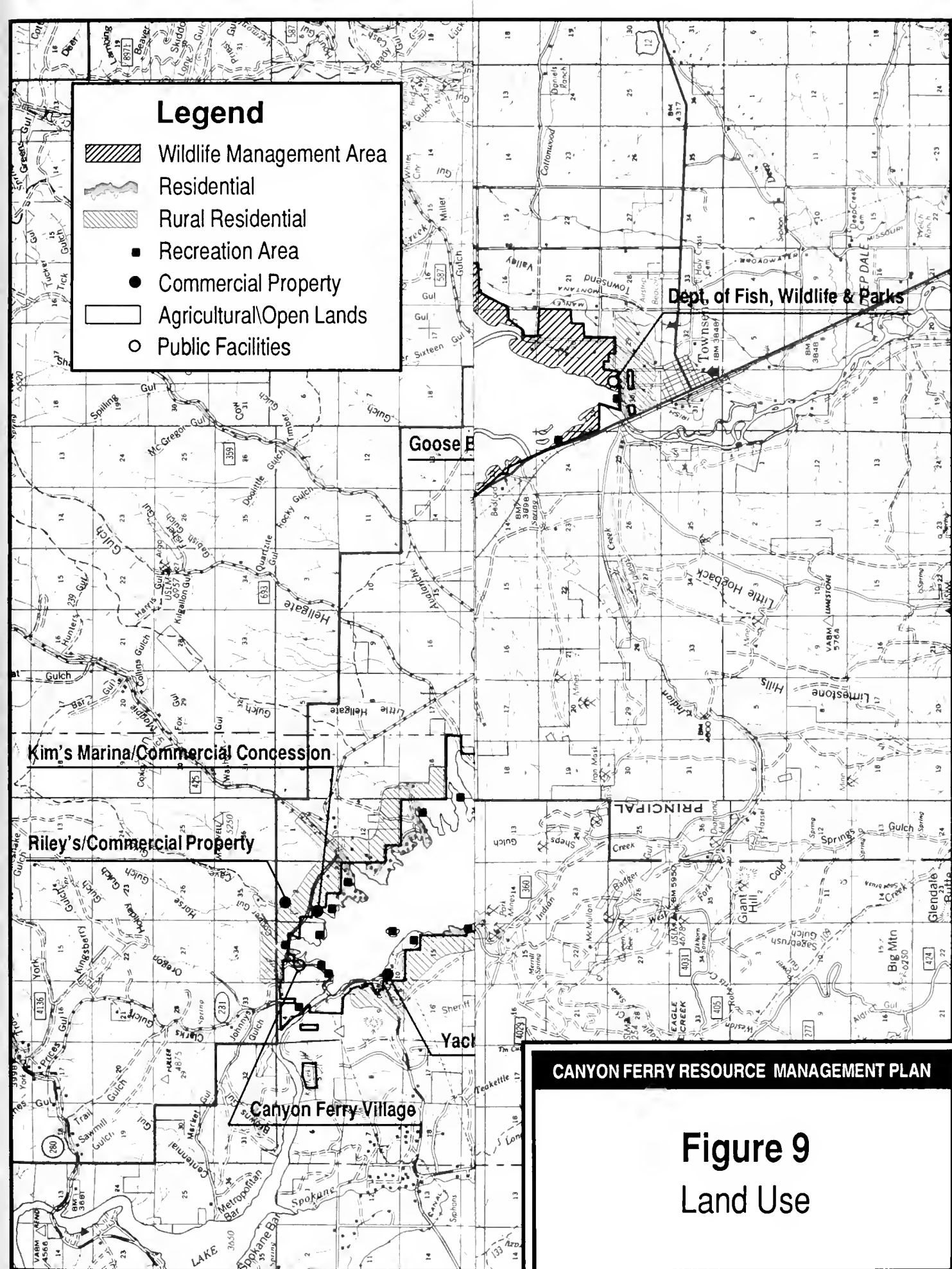
Land within the study area is primarily in recreational and open space/conservation uses. The exceptions to this are the commercial concessions sites, the cabin lease sites, the offices and residential buildings at Canyon Ferry Village, and incidental buildings associated with area management (see Figure 9).

Private lands adjacent to parklands support primarily residential uses at the north end of the lake. Riley's Bar and the restaurant at Yacht Basin are the two commercial uses on adjacent lands. On both the east and west shores, some second-home development is evident on adjacent lands, but ranching operations predominate. At the south end, ranching again gives way to more dense suburban development on adjacent lands.

Residential development along Canyon Ferry Road has seen a dramatic increase since the late 1970s. Divisions of land have taken place primarily through exemptions to the subdivision law;

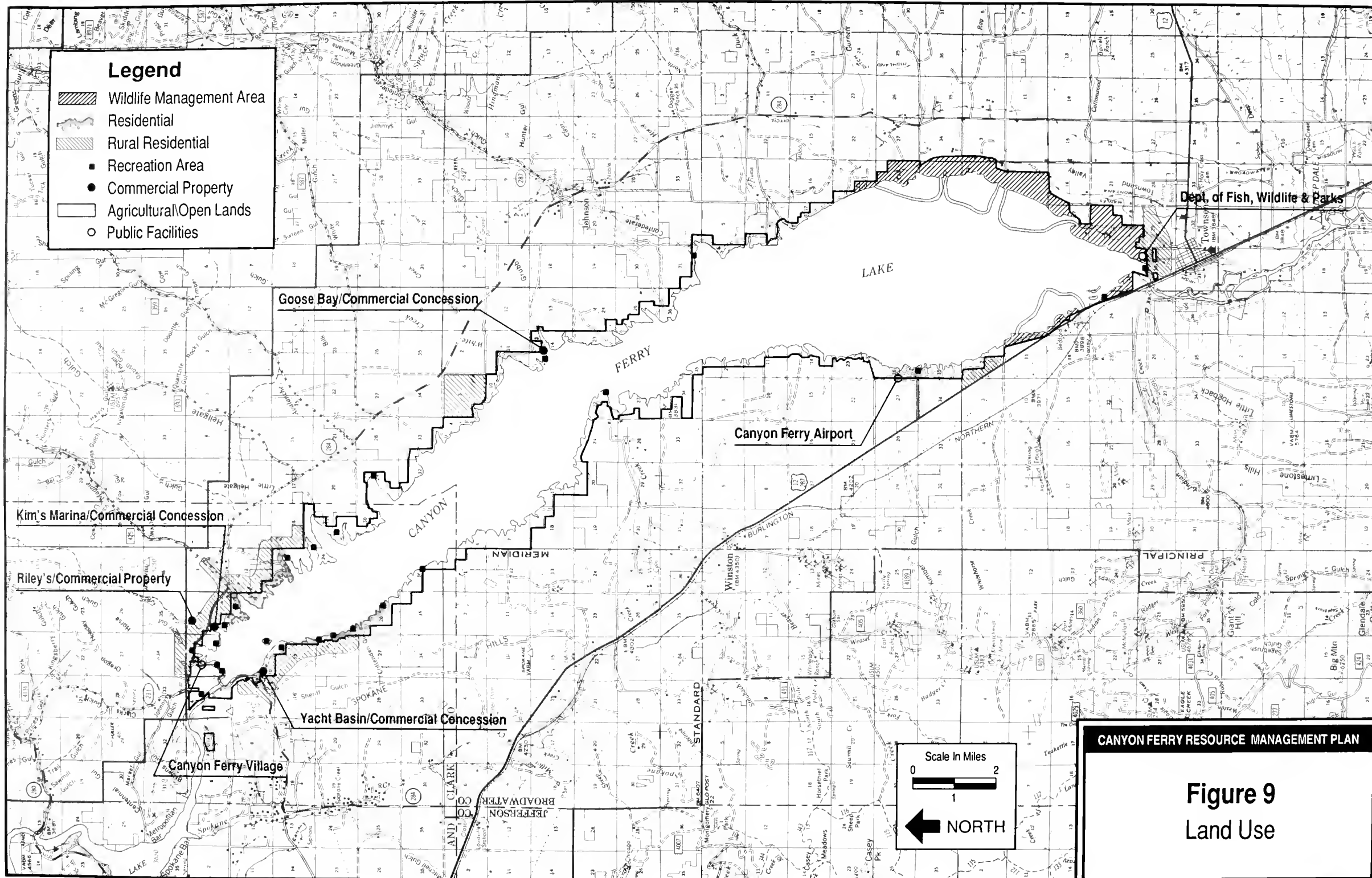
Legend

-  Wildlife Management Area
-  Residential
-  Rural Residential
-  Recreation Area
-  Commercial Property
-  Agricultural/Open Lands
-  Public Facilities



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 9
Land Use



much of this development is unreviewed for access and other public services. The same holds true for land development along the east shore except that development has been slower. Development has been more limited on the east shore both by demand for the location, and by availability of water. Ultimately, as private land develops some impacts may occur. The visual character of the lake will change to one more suburban in nature. Transportation conflicts may arise between residents wishing to get to work, and slower-driving recreational traffic. There may be more unauthorized use of vehicles on Reclamation lands.

Cabin Sites

There are 265 cabin site leases at Canyon Ferry; 167 along the northeast shoreline and 98 along the northwest shoreline (see Figure 9). Recreation homesite leases were first issued by the State in 1958. Reclamation's 1958 Management Plan for the area states that ... "because of the scenic values of Canyon Ferry, with unusually good topography and tree cover, it is believed that this reservoir offers logical sites for public use and development, organized camping, club sites, and seasonal cabin sites." It further states that, "Although it is not known what the demands will be for private cabin sites, it is expected that a moderate number of requests will be received from individuals in the nearby communities..." There is some evidence that there was a demand for cabin sites even earlier as evidenced by an excerpt from a paper by Westby in 1954, "... There should be enough land around the lake for private ownership, and there are very attractive cabin sites that may be developed if there is a demand, which has already happened."

In his thesis on the cabin site leases, Steven Clark concludes that while no agency policy for initiating a lease program can be found, the following may provide some reasoning. Cabins were being built on Reclamation land prior to the issuance of lease. This may have precipitated a lease program since Reclamation was not opposed to cabin sites at the time, but rather was concerned about the lack of a managing agency, and orderly development. At the time the dam was built, there was resistance from the local farming community whose lands were to be flooded. Reclamation may have wished to win over public opinion by promoting multi-use benefits for the local public. Further, it may have wanted to bolster cost/benefit ratios to Congress by demonstrating public benefits, thus securing future authorizations for this and other projects. Another explanation is that Reclamation may not have anticipated the drastic increase in demand for waterbased recreation that has occurred in the last 40 years. In 1958, annual visitation to Canyon Ferry was projected at 25,000 with peak visitation of 800 people. In any case, the early position of Reclamation was for leasing, and for subsequent rapid development of the sites with structures that complied with codes and covenants.

In 1965, seven years after leases were first issued, the Secretary of the Interior called for a phaseout of all cabin site leases on Department of Interior lands. This action precipitated a visit to Washington, D.C. by a delegation of cabin site lessees from Canyon Ferry to lobby against the phaseout. An opinion released by the Interior Solicitor exempted Canyon Ferry from the policy because it was under the control of a separate managing agency; DFWP.

Although this calmed the controversy temporarily, it brought home to the leaseholders the fact that the investments they had made in the cabins, and the leases themselves were vulnerable. In 1968, the Canyon Ferry Recreation Association (CFRA), a group composed primarily of lessees, asked the Montana Congressional delegation to intercede on their behalf, to authorize purchase of the sites. This was attempted again in 1971, both times with the same response. This

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response can be summed up by a letter from then Reclamation commissioner Ellis L. Armstrong, excerpted in the Clark thesis: "The Bureau policy relative to existing cabin site leases at Canyon Ferry reservoir is consistent with the policy of the Department of the Interior, which provides that where competition for specific land areas develops between cabin site use and general public recreation use, the latter will take precedence. This policy is supported by the need to assign a higher priority to public use for Federal lands as opposed to cabin site use which is essentially a private use. However, informal advice from our Regional Director's office at Billings, Montana, indicates no immediate prospect that lands presently leased for cabin site purposes at Canyon Ferry reservoir will be needed for public use in the foreseeable future. Thus, it is not likely that any of the presently held leases will need to be terminated soon."

In 1973, the Lewis and Clark County Commission requested the sale of the cabin sites on the premise that the county would accrue taxes from the land to, in turn, provide services. The Commission request was rejected for reasons stated in the above Reclamation policy.

During the 1980s, when the federal government initiated its Assets Management program, essentially a divestiture of "surplus" public lands, inquiries were again made to the federal government and DFWP regarding sale of cabin sites. No lands at Canyon Ferry were recommended for sale by either agency.

In 1983, the CFRA formed a cabin site purchase committee. The committee contacted Bruce Bugbee of the American Public Land Exchange (APLE) company to assess the feasibility of a land trade proposal. Reclamation again expressed little interest in a trade.

In October 1984, CFRA retained Mr. Bugbee to present a conceptual proposal to Reclamation, DFWP, and Lewis and Clark County Commission, Helena Valley Irrigation District, and the Areawide Planning Office. This proposal consisted of selling the cabin sites and having the proceeds go to a development rights purchase program in the Helena Valley. Rights would have been purchased on irrigated agricultural lands that were designated as having other important public values such as critical wildlife, open space, or environmental values. Further justification for spending the cabin site proceeds here was that lands under the federally-funded irrigation system in the valley were being subdivided; this program would protect those lands and public investment in the irrigation system (Lisa Bay Consulting and Bruce A. Bugbee and Associates 1984).

Though no formal proposal had been submitted, Reclamation and DFWP formulated a joint response. In summary, the agencies concluded that proposed use of the money did not maintain the recreational and wildlife values at Canyon Ferry, and that sale of the cabin sites did not protect future public and project needs at the lake.

Specifically, it was stated that: All acquired lands were considered necessary to meet long-term project needs, that the cabin sites were being leased for 10-year increments with the understanding that leases might not be renewed if the land was needed to fulfill authorized project purposes. The leasing of cabin sites was considered a private incidental use and was not intended to foreclose the option to return the lands to use by the general public at such time as use or needs of the project warranted. Further, the mitigations suggested by using the proceeds of the sales to purchase development rights did not offset the possible impacts on future water-based recreational uses that could be offered at Canyon Ferry. This would also create a situation at the

sites that could result in jurisdictional and public service problems. Covenants suggested by the proposal to protect the lake's scenic quality in the event of a sale were considered to be a long-term enforcement problem involving possible costly litigation.

In May 1985, Mr. Bugbee submitted a formal proposal on behalf of CFRA answering many of the concerns voiced by the agencies and offering to establish a permanent trust fund with the cabin sale proceeds. The proposal demonstrated that interest from the trust would substantially exceed the annual lease fees.

In July 1985, the agencies prepared a formal joint response to this proposal. The response reiterated the position that, once public landownership was lost through the sales, reservoir operation could be constrained, future recreational options could be foreclosed, and jurisdictional and management difficulties could result. It was also pointed out that such a proposal would require a number of complex steps beginning with Congressional action to authorize such precedent legislation. Also, cabin site owners could lose some of the benefits that they now enjoy, such as private boat docks.

In 1988, DFWP substantially increased annual lease fees from \$200-250 to an average fee near double that. This may have prompted many leaseholders to seriously consider ownership since costs of leasing were no longer as advantageous.

In spite of all the attention given this issue, there are still outstanding questions. Reclamation has in place a policy to phase out cabin site leases on its lands as other public needs arise. (See Management and Administration). This policy has not been implemented because Reclamation has not needed these lands for project purposes, and because DFWP is the managing agency. Both agencies recognize the need for reconciliation of this issue.

The cabin site owners have argued that if the federal government intended to phase out the leases, it should never have allowed the level of private investment that it has. (CFRA estimates that improvements totalled \$9-12 million in 1987). The agencies could argue that although policy has been inconsistent in the past, it has for the last 25 years, rejected all attempts to privatize, and retained 10-year increments on leases. The difficulty has been in addressing the belief on the part of some of the lessees, valid or not, that they have a vested interest in the land.

The cabin site lessees state that they would control only eight percent of the 76-mile lakeshore. Managing agencies contend, however, that this is some of the most desirable lakeshore.

In the fall of 1990, CFRA conducted a mailout survey to the 265 leaseholders on the concept of cabin site ownership. The vast majority of respondents were in favor of purchase. The survey solicited comments about conditions that would need to be in place for sales to occur. These outstanding issues are listed below:

- 1) Would public services such as road maintenance be provided by private or public entities, and how much would they cost?
- 2) There are risks involved for the lessees in the event of a sale. Although exclusive sales to occupants of lands of this type have taken place, Congressional authorization

was necessary. The lessees stand the risk of losing their investments to the highest bidder.

3) The cabin sites do not include beaches. Beaches are public property and would probably remain so for the purpose of maintaining the reservoir. Reclamation policy does not allow docks and other water-related facilities to be installed by private users other than lessees and concessionaires. Therefore, the lessees stand to lose some key privileges.

4) Sale price would be based on fair market value. The price, financing, taxes, and any other costs would have to be favorable for some buyers to remain interested.

5) Protection of the cabin sites would have to be assured in case water levels were ever raised.

Another outstanding issue has to do with year-round occupation of the cabin sites. These properties were originally intended to be seasonally-occupied (U.S. Department of Interior 1958). As they have become permanent dwellings, the area has taken on both the appearance and demands of a community, including the provision of fire protection, year-round road maintenance, and law enforcement. The CFRA has acted as a de facto council for airing "community" concerns, although there is no formal way to govern the "community" and traditional sources of public funding are not available to it.

2.10.2 Status of Reclamation Lands

Flood Easements

At the time that lands were acquired for construction of the reservoir, flood easements were acquired over private lands where the potential for flooding was anticipated. Reclamation is not liable for property damage caused by flooding on lands where there are flood easements. These lands are located at the south end of the lake near Townsend.

Federal Floodplain Designations

The Federal Emergency Management Agency (FEMA) has mapped flood hazard boundaries for two tributaries to the reservoir; Missouri River and Duck Creek (see Environmental Constraints). Flood hazard boundaries are approximate limits of a 100-year flood event, based on historical flood events and ground elevations rather than a detailed study. Other tributaries to Canyon Ferry may flood but have not been mapped.

Encroachments

Private encroachments on Reclamation lands at Canyon Ferry include the following:

Retaining Walls. There are no standards in effect for construction of retaining walls, and in the past, building permits have not been consistently enforced. Because of this, the visual and structural quality of retaining walls around the reservoir varies greatly. Most retaining walls have

been privately constructed and are in various stages of repair. In addition, Reclamation and DFWP have constructed walls or placed rip rap to protect against shoreline erosion. DFWP is in the process of revamping its permit process, including coordinating with the Army Corps of Engineers to require permits for any structures built within the high water mark (e.g., retaining walls).

Boat Docks and Other Land Based Facilities. Boat docks, patios, decks, bathhouses, boathouses, staircases and other land-based facilities are subject to a DFWP permit process. Individual boat docks, though privately built and maintained, are required to be available for use by the public. Conflicts have arisen between the general public and boat dock owners who perceive that the docks are for private use only.

Private Landscaping and Irrigation Systems. In some cases, elaborate landscaping projects and irrigation systems have been installed at considerable private expense on public shoreline, outside cabin site lease boundaries. Again, these areas are open to public use and sometimes generate misunderstandings between the lessee and the public.

Cattle. Cattle are grazing on Reclamation lands without benefit of a grazing lease. This is occurring for the most part on the west shore between the cabin sites and Silos.

Canyon Ferry Village

Canyon Ferry Village consists of an office building and parking for Reclamation staff, the Visitors Center, a visitor pavilion, government camp, tennis courts, and a boat dock for Reclamation and DFWP personnel (see Figure 10). All of the structures in the village but the Visitors Center were built in the late 1940s or early 1950s when the dam was being constructed. The Visitors Center was formerly a school house located in the original Canyon Ferry Village (see Cultural Resources). The buildings within Canyon Ferry Village were excluded in the original MOU between Reclamation and DFWP, and so remain under the jurisdiction of Reclamation.

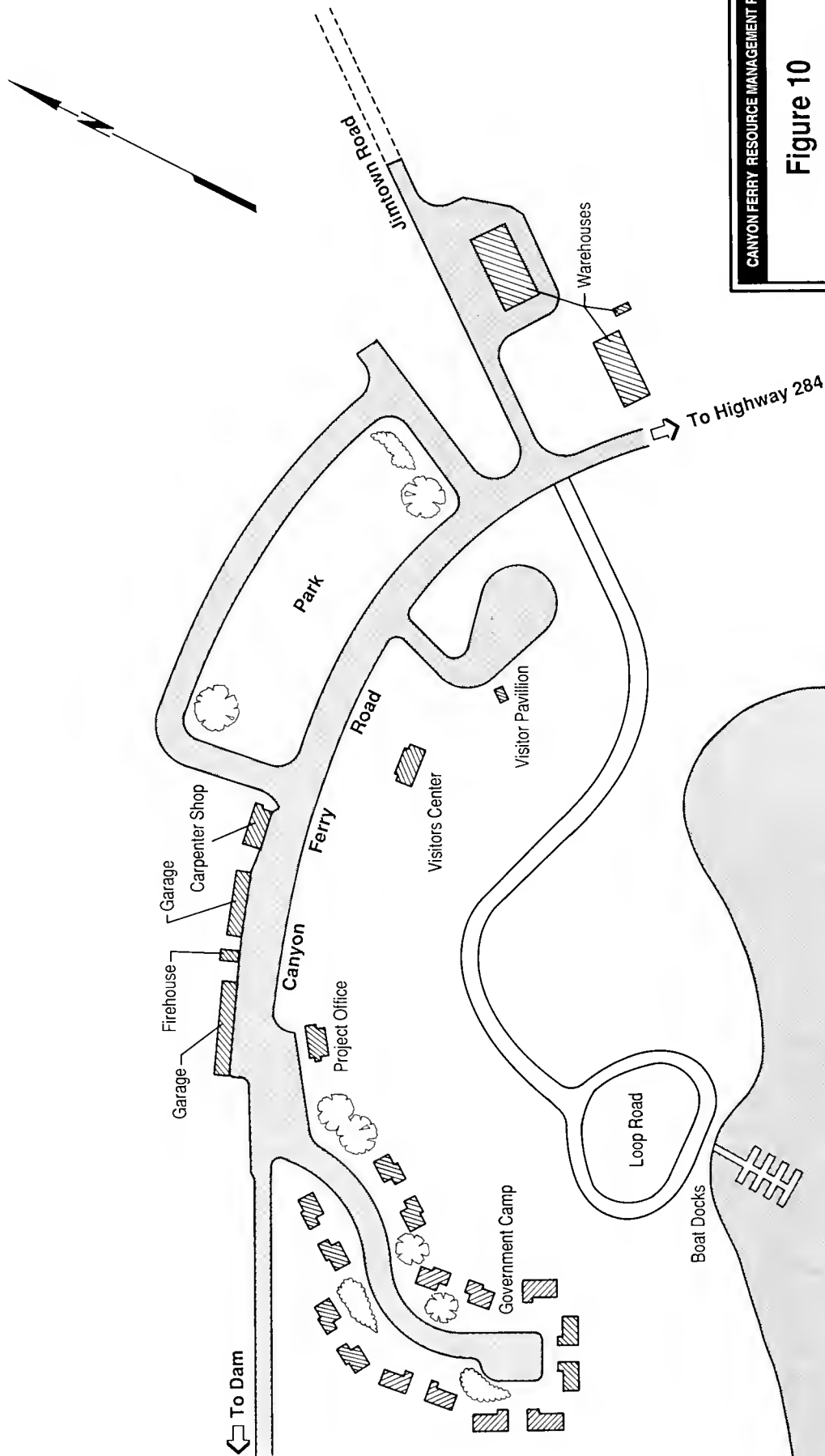
The houses in the government camp are structurally sound but need water and sewer line and lateral repair. The plumbing in these units may also need replacement. The units are served by a community septic system. There are three 3-bedroom houses; the remainder are 2-bedroom. All have single car garages and small metal sheds (Pete Schendel, pers. comm., 2/25/91).

As of 1991, DFWP occupied three of the houses; one is the park manager's residence, one the park office, and the third is kept for summer seasonal workers. The Canyon Ferry Limnological Institute (CFLI) uses seven of the houses for its summer science camp but must vacate these by 1995. Federal, state and CFLI representatives are cooperating on a study to relocate CFLI facilities to another location on the reservoir.

The former Community Center has been converted to a natural history and cultural interpretive and information center for visitors. It will continue to be used for elections and by CFLI for class and dining-room space downstairs.

There have been various discussions about the ultimate fate of the village. Many of the present uses are there because of building availability, not because the uses are best suited to the

MAP NOT TO SCALE



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 10
Canyon Ferry Village
Layout

CANYON FERRY LAKE

structures. DFWP and Reclamation are assessing their office, facility, and public educational needs.

Canyon Ferry Limnological Institute (CFLI)

CFLI will continue to study water quality at Canyon Ferry. CFLI is a non-profit corporation, covering expenses through grants and tuition. Although CFLI is currently administered as a summer program, its directors, Gil and Marilyn Alexander, are ultimately working towards the creation of a year-round water study institute, replete with an all-encompassing data base on water throughout the U.S., an on-going data base for the Missouri River drainage, acquisition of sophisticated water analysis equipment, field staff, and creation of a unique learning resource available to the nation.

The facilities that CFLI now uses at Canyon Ferry Village are provided at no charge by Reclamation. Minimal charges for facilities may be made in the future.

CFLI has applied for grants from various foundations. Grant awards would enable the establishment of an annual water congress at Canyon Ferry, the development of a multiple-grade-level curriculum centered around water quality and aquatic ecology, and purchase of computers and other analytical equipment essential to such a learning center.

Canyon Ferry Airport

Montana Aeronautics Division (Division), Montana Department of Transportation, has a use permit to conduct public airport activities at the Canyon Ferry Airport, located just north of the Silos recreation area. In the fall of 1986, Reclamation became concerned over the construction of two new hangars on the airport property and discussions were held between DFWP, Reclamation, and the Division. All parties agreed to hold off on any further construction until Reclamation had time to study their long-term plans for the property.

The Division is interested in acquiring the airport property partially because there has been interest expressed on the part of a developer to subdivide adjacent properties as an airpark; allowing access of private property owners to a public-use airport facility. The developer has stated that a total of 32 lots in two subdivisions have the potential for airpark development.

The Division foresees potential for both recreational and private commercial use of the airport in conjunction with Canyon Ferry and a possible airpark. They also feel that this would advance aviation, tourism, and aviation infrastructure in the state (Michael D. Ferguson, in a letter to Pete Schendel, 10/31/91).

According to Reclamation policy on aircraft (see Management and Administration), any change in use would probably involve authorization by Reclamation's regional director. In order for a transfer of ownership to take place, Reclamation would have to make a formal determination, pursuant to their disposition of land policy (see Disposition of Reclamation Lands), that the land in question was no longer needed for project purposes. Then an environmental review would have to be prepared to assess the possible impacts on nearby recreation facilities and residential subdivisions. This issue is yet to be resolved.

Agricultural Leases

There are a total of 9 leases on the WMA; 7 farming leases, one combination farming/grazing, and 1 grazing lease. These leases cover 1,074 acres and generate \$14,577 in lease payments as of 1991. DFWP manages the leases. Most of the cropland leases involve irrigation from the Manley and Montana ditches, located partially within the WMA.

At the present time, livestock grazing is used to enhance wildlife habitat in the WMA. One preferential lease dates back to Reclamation acquisition of the land and may continue within the family but not be transferred. In the near future, this lease will no longer involve grazing, but some cultivation. The second lease has a 5-year term that will be up for re-evaluation in 1994. This lease is exercised in the spring for about one month, allowing about 100 animal unit months. DFWP does not have a formal grazing policy for the remainder of the reservoir.

Irrigation

There are presently two long-term (20 to 40-year) contracts for irrigation water from Canyon Ferry. Reclamation sells water to irrigators near Beaver Creek and on the north end of Pond 4 in the WMA. Additional water could be sold for irrigation. Water is also being supplied via tunnel and canal to the Helena Valley Unit to irrigate about 15,000 acres.

Fencing

Reclamation is responsible for initial boundary fence construction around reservoir lands. DFWP is responsible for maintaining boundary fences and for construction and maintenance of interior fences needed for recreation purposes.

The reservoir is fenced down to Townsend on the east side of the reservoir. On the west shore, fencing is complete from Townsend north to Canyon Ferry Airport. From the airport north, Reclamation lands are unfenced until Orchards day-use site where fencing resumes again and continues north to the dam.

At present, a lack of boundary fence has allowed cattle to trespass onto Reclamation lands. There have been complaints about cattle grazing between White Earth and Silos, and ensuing conflicts between cattle activity and campers.

2.10.3 Other Land Use Issues

Operators Training Trust (OTT)

The Operator Training Trust is an organization that trains heavy construction equipment operators. This group functions as a source of labor at Canyon Ferry on projects that would not otherwise go to bid. It has constructed such projects as site preparation at Shannon.

Timber Sales

Helena National Forest has seven timber sales planned over the next ten years within the watershed of Canyon Ferry. Several of these are in the Deep Creek area, northeast of Townsend.

Two of these would be within the viewshed of Canyon Ferry (see Visuals); the Bugs sale, to be let when adequate regeneration takes place, and the Lower Duck sale, to be analyzed for its feasibility in the near future (Tom Carlsen, pers. comm., 12/6/91).

The Forest Plan recognizes the need for view- and watershed protection relative to Canyon Ferry. Watershed protection includes the mandatory use of Best Management Practices, and keying mitigations to maintain fishery quality in trout streams (e.g., in Deep Creek) (Bruce Short, Helena National Forest, personal communication, 2/25/92).

Signing

Directional signing for tourists consists of highway signs at the turnoff onto Canyon Ferry Road from Highway 287, from Highway 12 onto Highway 284 near Townsend, and along Canyon Ferry Road from Helena. In addition, State Park Division signs are located near turnoffs to recreation sites along the roadways. Private commercial signs also signal tourists along Interstate-90, Highway 287, and on Canyon Ferry Road.

Regulatory signing appears at individual recreation sites.

Commercial signing is located both on and off Reclamation lands associated with private vendors and concessions.

Landscaping

Landscaping was first attempted at Canyon Ferry in the late 1950s at the river inlet to the reservoir for purposes of replacing wildlife habitat that had been inundated by the dam. Since then, landscaping has taken place at many of the sites for esthetics, dust control, and privacy. One of the greatest limiting factors to successful establishment of vegetation has been a lack of consistent irrigation systems and personnel to maintain plantings. It has been suggested that water be taken from the lake for such irrigation.

2.10.4 Future Land Use

Residential uses (present and future cabin site leases) within the park will be examined within the management section of this plan. There has been discussion of expanding the cabin site lease program to the south end of the lake. Land use is regulated on each site by stipulations within each lease.

Private residential development will continue to occur adjacent to the park. Development of a recreational vehicle park across from Riverside recreation site has been informally discussed with Lewis and Clark County Planning Department (Robert Rasumssen, Lewis and Clark County Planning Department, personal communication, 1/15/92).

Future commercial development within the park will also be examined in light of the policies developed by this plan. One suggestion has been the opening of a commercial marina at Silos, and possible development of a destination resort. There is no zoning in either Lewis and Clark or Broadwater counties that would preclude such development on private land.

The opening of additional recreation sites has been suggested as had the reopening of day-use sites on the west shore to camping. Until 1979, the west-shore sites were open to camping but this was discontinued because of poor road conditions and associated night travel, and the difficulty of managing yet another area on a 24-hour basis (Montana Department of Fish and Game 1976). Sites were considered too small, steep and close to the cabin sites, and thus were determined to be more appropriate for day use (Don Hyyppa, pers. comm., 3/22/91). A re-examination of future recreation needs has been conducted as part of this plan.

2.10.5 Landownership Patterns

The landownership pattern around Canyon Ferry Reservoir immediately adjacent to the lake, was determined when the reservoir was first constructed and filled. Private properties were bought in total from affected landowners, thus public property boundaries are often squared off along section lines instead of following a curved pattern around the shoreline.

The entire shoreline is public, though distances to inland property boundaries vary (see Figure 11). These lands are administered by Reclamation and remain so for purposes of maintaining the reservoir. Reclamation contracts with DFWP for management of these lands as discussed under the management section of this report.

At the north end of the lake, adjacent to Reclamation lands, the ownership pattern is of relatively smaller, privately-owned parcels (20 acres or less). Within Lewis and Clark County, most parcels within one-and-one-half miles of the lake fit this pattern although there are a couple of exceptions including a large BLM parcel at Crittendon Gulch.

Along the mid-sections of the lake in Broadwater County, most adjacent land within one-and-one-half miles is in large private ranch holdings. Intermittently, State School Trust lands, BLM parcels, and 20-acre divisions of land interrupt this pattern.

At the southeast end of the lake near Townsend, parcels of 100 acres or less predominate. Most of this land is in private ownership.

2.11 RECREATION

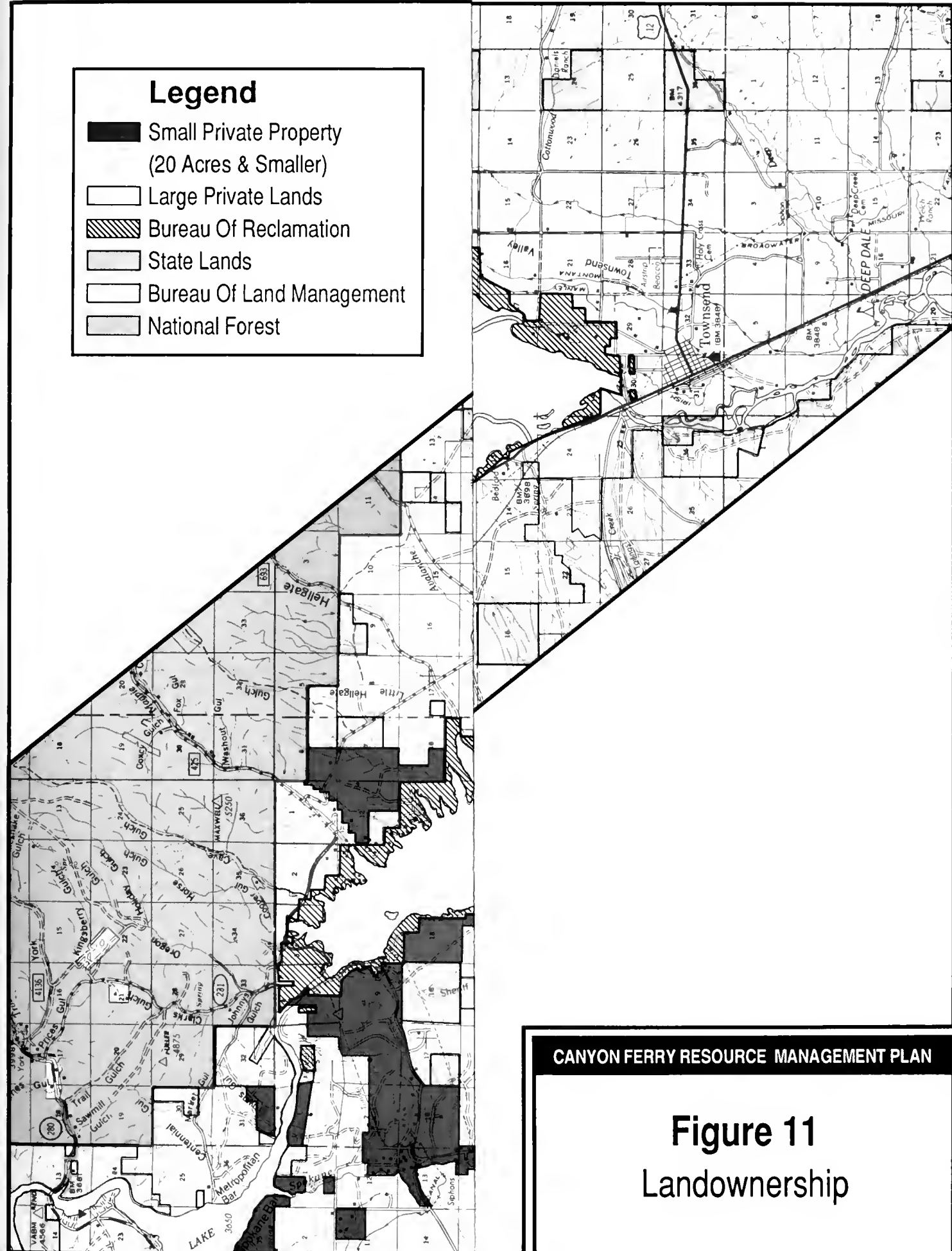
2.11.1 Recreational Setting

Canyon Ferry State Park offers the full breadth of water-related recreation opportunities, from sailing and sailboarding to fishing, motorboating and swimming. Camping, picnicking and passive forms of enjoyment such as wildlife-watching are available here. Hunters are attracted by both waterfowl and upland game birds, and big game animals. Even with all of these activities, much of the area's recreation potential remains untapped.⁷

⁷In some instances, data used for preparation of this section may appear to be outdated or lacking. These, however, are the best data available. Where there is a need for better information or survey data, it has been noted in Chapter III.

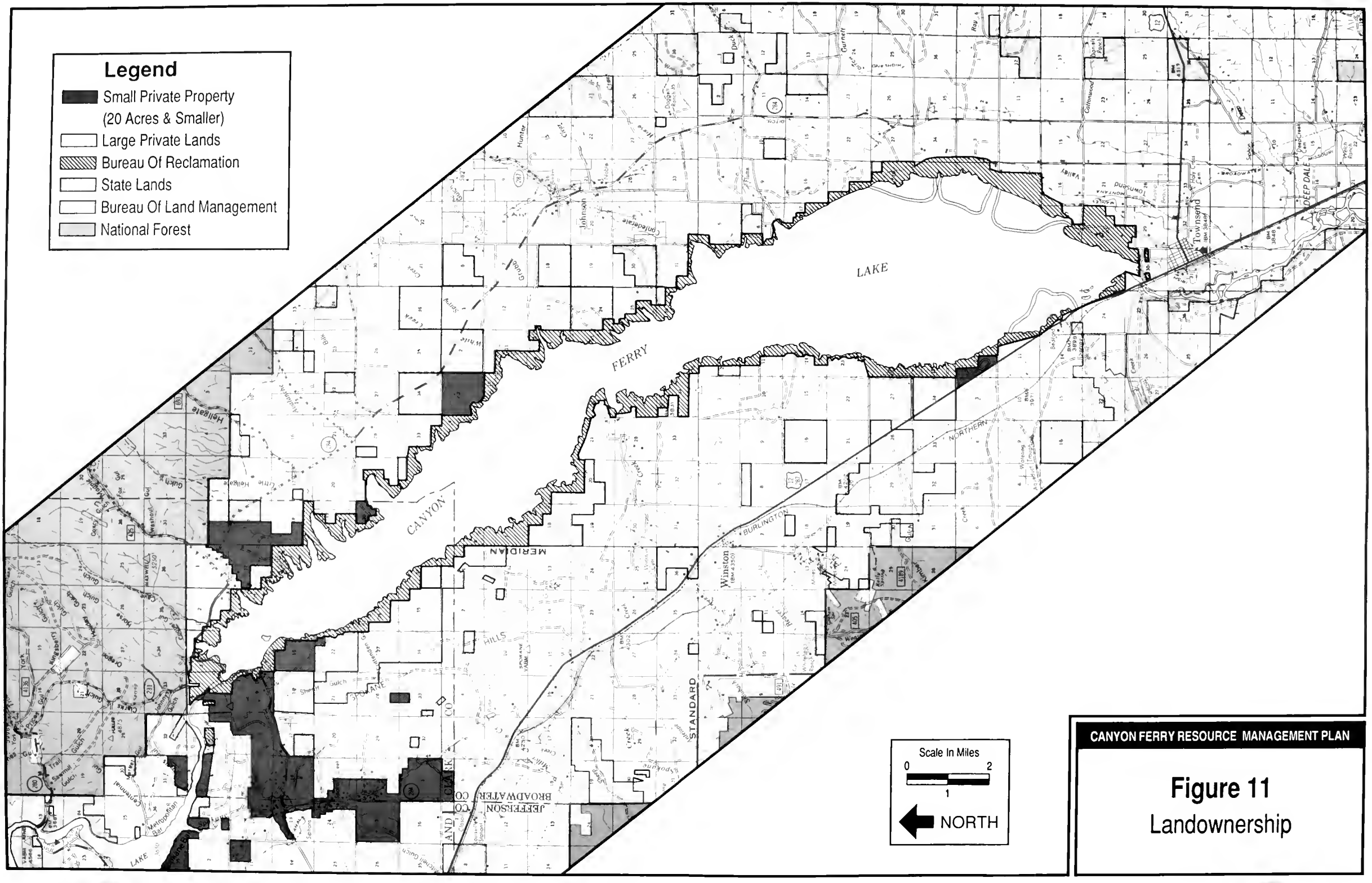
Legend

-  Small Private Property
(20 Acres & Smaller)
-  Large Private Lands
-  Bureau Of Reclamation
-  State Lands
-  Bureau Of Land Management
-  National Forest



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 11
Landownership



Legend

- Small Private Property
(20 Acres & Smaller)
- Large Private Lands
- Bureau Of Reclamation
- State Lands
- Bureau Of Land Management
- National Forest

Scale In Miles

0 1 2

← NORTH

CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 11
Landownership

Canyon Ferry is about equidistant from Yellowstone and Glacier parks; about 3.5 hours driving time, respectively. Because it lies within the travel corridor between Montana's two primary tourist attractions, there is the potential for expansion as a recreational attraction. Canyon Ferry is one in a series of three reservoirs on the Missouri. The others, directly north, are Hauser and Holter reservoirs. Canyon Ferry is distinct from the other two in that it is surrounded by public lands and offers far more public recreational access. Canyon Ferry State Park is the only facility of its size and breadth of activity within the region identified under Socioeconomics. Spring Meadow Lake State Park in Helena offers water-based recreation on a much smaller scale and for day-users only.

2.11.2 History of Recreational Development

Recreation management of the area formally began in 1957 when Reclamation signed an agreement with the State Parks Division for management and development of recreation sites at Canyon Ferry. Magpie Bay was one of the first sites to receive tables and sanitary facilities. In the early 1960s, Reclamation and DFWP cost-shared the provision of minimum basic health and safety facilities at some of the more heavily-used sites. Chalet and Fish Hawk on the west shore were first leased to the National Guard in 1964 for the purpose of providing recreational areas for National Guard members. In 1976, these areas were turned over to DFWP for administration (Montana Department of Fish and Game 1976).

In 1966, Reclamation provided additional funds for basic health and safety facilities at Riverside, Cemetery Island, Court Sheriff, and Hellgate recreation areas, and more facilities for the west shore. In 1972, the Parks Division began further development of the area, adding updated toilet and garbage facilities, water supplies, barrier posts to designate campsites, and a signing program throughout the area. Caretakers were hired for seasonal on-site maintenance and camping fee collection (Nelson 1984). There are currently 24 recreation sites within Canyon Ferry State Park (see Figure 12 and Table 8).

Since 1975, DFWP and Reclamation have contributed to several capital improvements programs to enhance area facilities. DFWP has successfully recruited citizen volunteers to build and maintain facilities, including cleanup of the cemetery on Cemetery Island and the construction of a floating tire breakwater at the Silos recreation area.

When, in 1988, a transfer of management was being considered by Reclamation and DFWP, both the BLM and USFS conducted individual on-site reconnaissances of the study area as they considered possible management by their respective agencies. Each agency produced general management projections and costs (see Appendix A Management History).

Short-term Improvements

The state legislature approved capital improvements for FY91-92 including completion of a breakwater and disabled boat dock at Silos recreation area, campground facility upgrades, and access road improvements.

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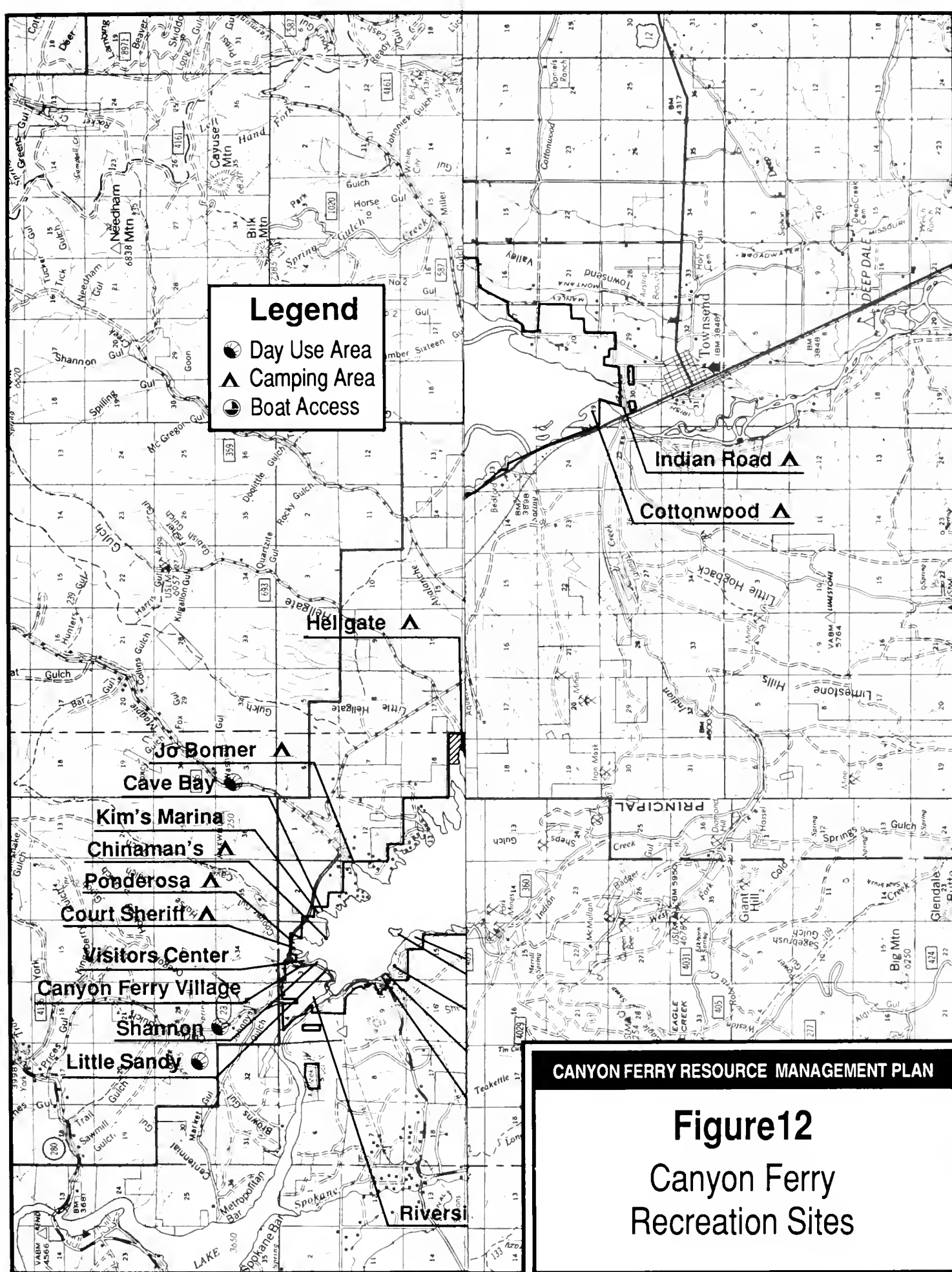
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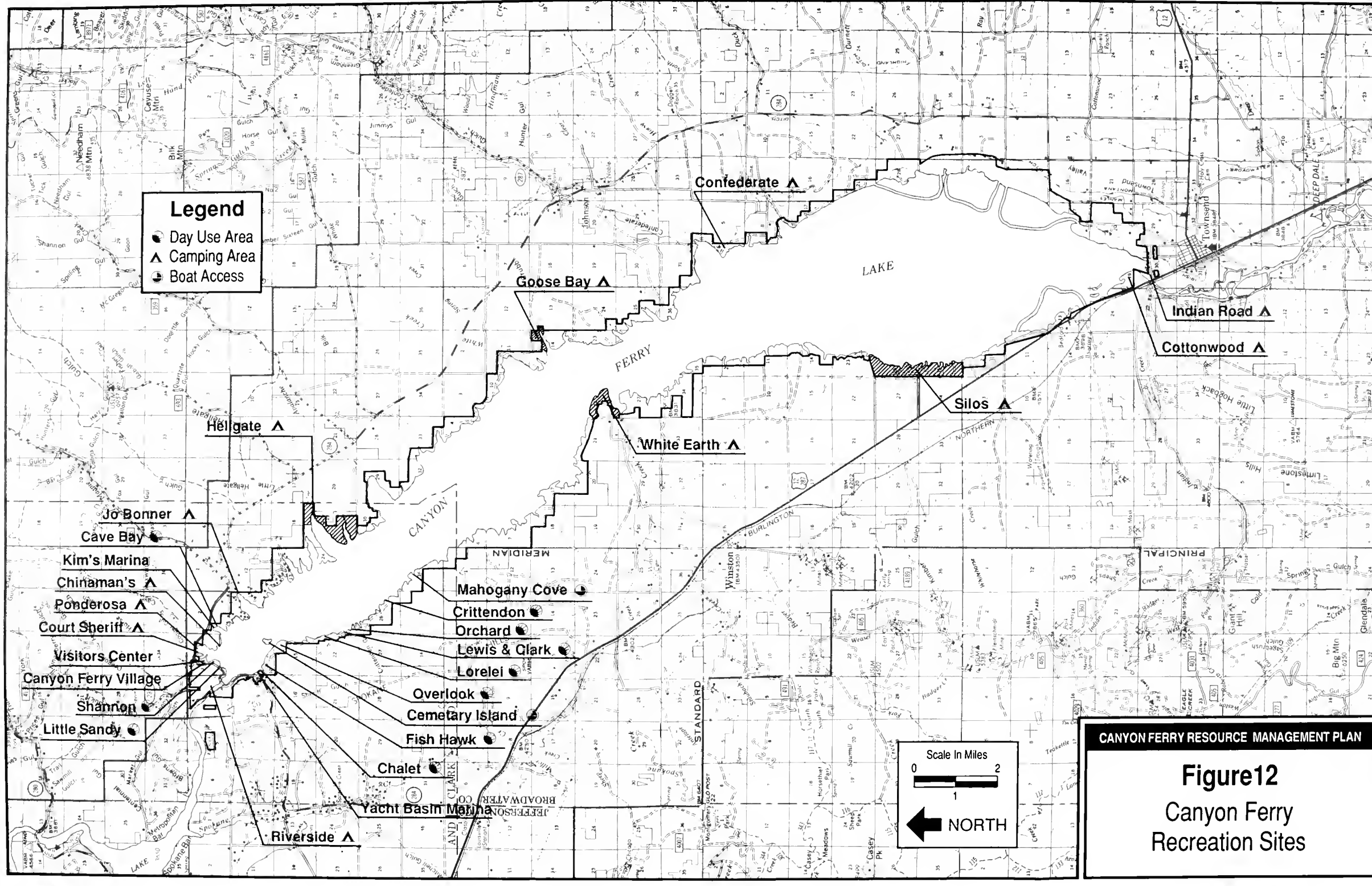
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CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 12
Canyon Ferry
Recreation Sites



- Legend**
- Day Use Area
 - ▲ Camping Area
 - Boat Access

Jo Bonner ▲
Cave Bay ●
Kim's Marina
Chinaman's ▲
Ponderosa ▲
Court Sheriff ▲
Visitors Center
Canyon Ferry Village
Shannon ●
Little Sandy ●
Riverside ▲
Yacht Basin Marina
Chalet ●
Fish Hawk ●
Cemetery Island ●
Lorelei ●
Lewis & Clark ●
Orchard ●
Crittendon ●
Mahogany Cove ●
White Earth ▲
Silos ▲
Cottonwood ▲
Indian Road ▲
Confederate ▲
Goose Bay ▲
Hellgate ▲

Scale In Miles

0 1 2

← NORTH

CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure12

Canyon Ferry
Recreation Sites

Existing Recreation Facilities

Source: Montana Department of Fish, Wildlife and Parks 1991.

(1) Dump stations are provided by DFWP at Kim's Marina and by private concession at Goose Bay.

TABLE 8.

Existing Recreation Facilities

| | Silos | White Earth | River-side | Court Sheriff | Pon-der-osa | China-man's | Cotton-wood | Indian Road | Goose Bay | Cave Bay | Jo Bonner | Hell-gate | Ceme-tery Island* | Con-fed-erate | Shan-non | Over-look | Fish Hawk | Lorelei | Crit-ten-don | Little Sandy | Mahog-ony Cove* | Orchard | Lewis & Clark | Chalet | TOTAL |
|------------------|-------|-------------|------------|---------------|-------------|-------------|-------------|-------------|-----------|----------|-----------|-----------|-------------------|---------------|----------|-----------|-----------|---------|--------------|--------------|-----------------|---------|---------------|--------|-------|
| FACILITIES | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAMP GROUNDS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 24 | 30 | 34 | 12 | 30 | 31 | | 9 | | | 2 | 61 | | | | | | | | | | | | 233 | |
| | | 35 | 34 | 12 | 31 | 35 | 1 | 9 | | | 4 | 75 | | 3 | | | | | | | | | | 239 | |
| | 24 | 7 | 19 | 12 | 31 | 9 | 3 | 13 | | | 2 | 21 | | | | | | | | | | | | 141 | |
| | 3 | 9 | 7 | | | 23 | | | 32 | | 5 | 48 | | | | | 6 | 1 | | | | | | 134 | |
| PICNIC SITES | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18 | | 11 | 4 | | | | | | 2 | 12 | 23 | 4 | | | 4 | 6 | 6 | 10 | | 3 | 6 | 4 | 113 | |
| | 3 | 1 | | | | | 1 | | | | 1 | 1 | | | | | | | | | | | | 8 | |
| | 3 | 1 | 3 | 4 | | | | | | | | 10 | | | | 2 | 2 | | 1 | | | | 3 | 1 | 29 |
| | 26 | 2 | 11 | | | | 3 | | | 2 | 14 | 31 | 4 | | | 2 | 7 | 6 | 10 | | 3 | 7 | 4 | 6 | 138 |
| | 3 | | 3 | | | | 1 | | | | 10 | 16 | 3 | | | 1 | 10 | 6 | 10 | | 2 | 5 | 11 | 1 | 82 |
| SOLID WASTE | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 33 | 21 | 7 | 2 | 4 | 7 | | 13 | | 2 | 9 | 14 | 6 | | | | 1 | 8 | 3 | 4 | 7 | 6 | 10 | 5 | 165 |
| | 1 | | 2 | 1 | 2 | 2 | | | | | | 4 | | | | | | | | | | | | 1 | 13 |
| SEWAGE & WATER | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | 2 | 6 | 1 | 2 | 4 | | 2 | | 1 | 1 | 7 | 1 | | | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 47 |
| | 1 | 2 | 1 | 1 | | 1 | | | | | 1 | 2 | | | | | | | | | | | | 1 | 10 |
| | 4 | | 2 | | 3 | | | 2 | | | | 2 | | | | | | | | | | | | | 13 |
| | | | | | | | | | | | | | | | | | | | | | | | | | (1) |
| BOATING/SWIMMING | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 390 | 80 | 252 | 80 | 80 | | | | | | 80 | | | | 320 | | | | | | | | | | |
| | 3 | 1 | 2 | 2 | 3 | | | 1 | 2 | | 1 | 1 | | | 2 | | | | | | | | | | 18 |
| | | | | | X | | | | | | | X | | | | | | X | X | | | X | X | 6 | |
| HANDICAPPED | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 |
| | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 |
| | 1 | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| | 1 | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| | 2 | | 2 | | | | | | | | | | | | | | | | | | | | | | 5 |
| | 2 | | 3 | | | | | | | | | | | | 1 | | | | | | | | | | 6 |

Source: Montana Department of Fish, Wildlife and Parks 1991.

• Denotes boat access only

(1) Dump stations are provided by DFWP at Kim's Marina and by private concession at Goose Bay

2.11.3 Visitation

Visitation Statistics

In 1975, the Department of Fish and Game (now DFWP) conducted a Canyon Ferry Information Use Survey. This survey showed that visitation at Canyon Ferry for 1975 was 172,112 user days. (A user-day is defined as a 12-hour period of use by any combination of one or more persons, for example, one person for 12 hours or three people for four hours.) The attendance figure was based on traffic counts and on-site observation.

From 1980 to 1986, DFWP compiled visitation data for Canyon Ferry by counting vehicles with mechanical traffic counters and using Montana Department of Highways feeder route trends. These data were then adjusted and analyzed. The figures are felt to be higher-than-actual for a variety of reasons. (All figures are in total visitors, not "visitor days"). They are not adjusted for cabin site or concessions traffic, nor for visitation of multiple sites during a single trip to the park. The fact that fee revenue was about 50 percent lower than projected for Canyon Ferry also led Park Division staff to believe that the historic visitation data are inflated (Jim Domino, DFWP, personal communication, 1/27/91 and Dave Conklin, DFWP, personal communication, 1/21/91). What the figures do show is a visitation estimate, and visitor trends over the period.

According to these figures, visitation rose steadily from 1980 to 1986, from 207,900 visitors to 600,100⁸ in 1986 (see Table 9). A formal traffic count program was discontinued after 1986, partially because the Parks Division staff no longer had faith in the numbers, and because there was inadequate staff to analyze the counts once they were collected (Jeff Tiberi, DFWP, personal communication, 1/23/91). Therefore, it is necessary to establish a baseline visitation figure for management purposes, founded on a variety of factors. The year 1989 was selected because a number of information sources were generated for that year in addition to traffic counts. 1990 entrance fee envelopes could not be used because of asbestos contamination.⁹

Three estimates for Canyon Ferry visitation are offered here. The first, and lowest, is based on entrance and camping fee envelopes, group use permits, and annual passports. The second is based on a survey taken by Department of Natural Resources and Conservation (DNRC), mailed out to 9000 resident and nonresident recreationists and anglers. The third and highest visitation estimate is based the 1986 DFWP peak year visitation estimate (see Table 10).

The DNRC survey (middle) visitation estimate, adjusted for higher nonresident use, is believed to be the most accurate and is used for purposes of projecting socioeconomic impacts in this report (see Appendix D Visitation Calculations).

⁸These figures are now regarded as highly inflated.

⁹In 1990, buildings at Canyon Ferry Village where the 1990 fee envelopes were stored were found to have asbestos contamination. The buildings were cleaned but the envelopes were sealed from use.

TABLE 9.

Canyon Ferry Visitation 1980-1986

Visitation (people) between Memorial Day weekend, and September 30, as determined by traffic count data or feeder route trends.
Annual visitation statewide is estimated to be 15 % higher.

| SITE | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 |
|--------------------------------|---------|---------|-----------------|---------|---------|---------|---------|
| West Shore Road ¹ | 77,600 | 57,700 | NC ² | NC | 42,200 | 64,300 | 69,600 |
| Cave Bay ³ | 1,600 | 1,200 | 86,200* | NC | 100,800 | 105,500 | 125,500 |
| Chalet ⁴ | 1,100 | 900 | 1,700 | NC | 1,200 | 1,600 | 1,600 |
| Chinaman's | 8,200 | 33,200 | NC | NC | 41,700 | 43,700 | 52,000 |
| Confederate | 1,600 | 2,100 | 2,600 | 3,300 | NC | 2,700 | 3,700 |
| Cottonwood | 1,100 | 1,100 | 1,200 | 1,300 | 1,100 | 1,500 | 1,400 |
| Court Sheriff | 11,000 | 8,200 | 24,800 | NC | 29,000 | 26,300 | 27,800 |
| Hellgate | 35,500 | 44,800 | 43,200 | 54,400 | 23,700 | 27,500 | 33,000 |
| Indian Road | 1,100 | 30,900 | 30,700 | 31,100 | 27,600 | 29,100 | 29,300 |
| Jo Bonner ⁵ | 1,100 | 8,200 | 68,700 | NC | 80,400 | 84,200 | 100,200 |
| Ponderosa | 16,500 | 20,300 | NC | NC | 25,500 | 26,700 | 29,200 |
| Riverside | 13,700 | 10,500 | NC | 38,500 | 41,800 | 33,800 | 45,900 |
| Scooter/Goose Bay ⁶ | 6,000 | 7,600 | 25,700 | 32,400 | NC | 26,700 | 37,000 |
| Shannon | 1,100 | 800 | NC | 5,300 | NC | 5,800 | 6,300 |
| Silos ⁷ | 17,400 | 21,200 | 21,100 | 21,400 | 19,000 | 21,000 | 21,000 |
| White Earth | 13,300 | 16,400 | 16,500 | 17,300 | 15,100 | 17,000 | 16,600 |
| TOTAL VISITS | 207,900 | 265,100 | 444,900 | 497,600 | 489,600 | 517,400 | 600,100 |
| AVG PEOPLE/VEHICLE | | | | | 2.96 | 3.22 | 2.96 |

¹ West Shore road includes Crittendon, Fish Hawk, Lewis and Clark, Lorelei, Orchard, Overlook, and 100 cabin sites.

² NC indicates that there is neither a Highway Department count or a Parks Division count for that year. The most recent previous count at that site has been used to arrive at a total visits figure for the year.

³ Cave Bay counter also includes Kim's Marina.

⁴ Based on reservations; assuming 25 persons per group classified as less than 50, 75 persons for groups classified as ranging from 50-100.

⁵ The 1984 and 1985 use figures are based on a figure of 38,200 visitors between 10/84 and 9/85.

⁶ These counts include Scooter Bay and Goose Bay Marina.

⁷ Silos had 4,154 vehicles, presumed mostly for ice fishing, between 1/82 and 4/82.

TABLE 10.

1989 Visitation Estimates

| | |
|------------------------|---------|
| Based on entrance fees | 102,275 |
| DNRC Survey | 205,878 |
| Traffic counts | 306,861 |

Visitation Trends

According to figures included on Table 9, visitation nearly tripled from 1980 to 1986. Though overall traffic counts were discontinued, the park manager has since elected to continue to place counters at key recreation sites to measure trends.

Based on counters that were monitored each year at Court Sheriff, West Shore Road at Chalet, and Hellgate, visitation dropped an average of 28 percent between 1987 and 1990. At a fourth continuously monitored site, Riverside, this trend began to reverse in 1988 when the salmon fishing below the dam was excellent and bald eagle migrations drew substantial numbers of visitors.

TABLE 11.
Visitation Trends Based on Traffic Counts
at Four Sites Around Canyon Ferry
1987 -1990

| | 1987 | 1988 | % ↑ ↓ | 1989 | % ↑ ↓ | 1990 | % ↑ ↓ | % ↑ ↓ 87-90 |
|---------------|--------|--------|-------|--------|-------|--------|-------|----------------|
| W. Shore Rd. | 36,523 | 31,245 | -14 | 28,473 | -8 | 27,302 | -4 | -25 |
| Court Sheriff | 12,395 | 10,076 | -19 | 9,580 | -4 | 9,196 | -4 | -24 |
| Hellgate | 15,967 | 14,141 | -11 | 11,311 | -19 | 10,221 | -10 | -36 |
| Riverside | 31,934 | 24,341 | -24 | 27,500 | +12 | 38,582 | +29 | +17 |

Source: Montana Department of Fish, Wildlife and Parks 1991.

A number of factors have affected visitation over the years have included the quality of fishing, major fires in the area such as the North Hills and Elkhorns fires, water levels, construction projects at individual campgrounds, algae blooms, the opening of Spring Meadow Lake (affecting primarily day-use), development of a kokanee salmon fishery in Hauser lake, bald eagle viewing, and the initiation of fees.

Upon closer examination, the figures in Table 11 lead to some interesting observations. Many have attributed the initiation of user fees as the major contributing factor to the drop in visitation at Canyon Ferry. The Parks Division estimates an initial drop in visitation of 25-40 percent statewide in 1989 (Doug Monger, DFWP, personal communication, 2/20/91). Yet the figures show that the greatest drop in visitation occurred in 1988, before entrance fees were levied. The average decrease for the four sites measured was 17 percent, well below the statewide estimate.

Riverside is considered an anomaly after 1988 since factors (e.g., bald eagle migration and salmon fishery) affecting visitation there were unique. After the fees were initiated, visitation decreased on an annual average of 8 percent at the three remaining sites.

The dramatic drop in visitation in 1988 was attributable to a variety of factors. Kokanee salmon fishing has been excellent on adjacent waters in recent years. The Elkhorns fire left a pall of smoke over Canyon Ferry for the better part of the summer, and Spring Meadow Lake opened in the summer of that year. It is suspected that the easy access of this site has wooed many of the day-visitors from the west-shore sites in particular. The extent to which this is true is unknown, but over 14,000 daily and annual passes were sold at Spring Meadow on each of the two years since its opening. Actual visitation is estimated to be well above those numbers.

But perhaps the greatest influence on visitation at Canyon Ferry is fishing. Creel censuses taken by DFWP biologists indicate that fishing quality has fluctuated historically with substantial declines in the fishery in the mid-1960s and mid-1980s (see Fisheries). Mean catch rates for rainbow trout declined between 1986 and 1989, apparently due to relatively unsuccessful hatchery plants made in 1987 and 1988. A total of 8,332 anglers were interviewed during the four summers on Canyon Ferry. Catch rates declined from 0.28 to 0.16 rainbow trout per hour over the period. (Catch rates are the average number of fish caught per hour.)

A total of 3,961 anglers were interviewed while ice-fishing. Angler catch rates for yellow perch declined from 3.68 in winter 1986/87 to 0.92 in winter 1989/90.

Another recent factor affecting fall/winter visitation is the bald eagle feeding area below Canyon Ferry Dam. Between the first week of November and second week of December, 1990, an estimated 10,200 people came to view eagles below the dam (Patrick Gubbins, pers. comm., 4/11/91).

Finally, water levels in the reservoir affect visitation. As water levels subside, boat docks, ramps, and marinas are left high and dry, and boaters are less able to use their crafts (see Management and Administration). Canyon Ferry has suffered lowered water levels for six of the past seven years due to drought (1985, 1987, 1988, 1989, 1990 and 1991).

Visitor data from fee envelopes was compiled for 1989 by the consultant preparing this report. 1990 and 1991 visitor data from fee envelopes were compiled by Parks Division staff, primarily for the purpose of estimating revenue sources. The two sets of data contain different pieces of information. However, total summer visitation (end of April through end of September) estimates can be compared for these three years.

Summer visitation estimates¹⁰ based on fee envelopes are:

| | |
|------|--------|
| 1989 | 66,165 |
| 1990 | 68,962 |
| 1991 | 67,515 |

These figures indicate that for the past three years, visitation has remained fairly stable. For 1990, day use accounted for 64 percent of total use and in 1991, day use rose to 71 percent of the total.

Visitation Characteristics

The 1975, DFWP Information Use Survey revealed that 65.3 percent of total use came from the four counties within 100 miles of the reservoir containing Helena, Bozeman, Butte, and Great Falls. Eighty-eight percent of total use was by state residents, 12 percent by nonresidents.

A decade later, the DFWP conducted a survey over a two-year period, interviewing visitors to Canyon Ferry during the winter and summer months, from the winter of 1986 to the summer of 1988 (Montana On-Site Recreation Survey, Summer 1986 and Winter 1986/87). The summer 1986 survey results have been referred to in this report, both because subsequent summer data were not substantially different, and because this survey involved more than twice as many interviews as those that followed.

Summer Visitation. An analysis of the nearly 600 interviews taken during the summer of 1986 shows a breakdown in visitation characteristics very similar to that of 1975. Eighty-six percent of visitors were state residents and 14 percent nonresidents. The top four counties contributed 55 percent of visitors: Lewis and Clark, Gallatin, Butte-Silver Bow and Missoula. Missoula County replaced Cascade County as the fourth highest county, while Cascade dropped to seventh in number of visitors. Table 12 shows the relative visitation percentages from the ten counties contributing the highest number of visitors in 1986.

TABLE 12.
County Visitation by Percent

| County | Percent visitation in summer '86 |
|------------------|----------------------------------|
| Lewis and Clark | 21.8 |
| Gallatin | 17.1 |
| Butte-Silver Bow | 8.4 |
| Missoula | 7.7 |
| Yellowstone | 6.2 |

¹⁰The 1990 envelope data were compiled prior to asbestos contamination previously mentioned. None of the estimates account for use of the area by nonpayers, such as primitive camping at Confederate, Goose Bay, and Cottonwood. Senior citizens who are Golden Year Pass holders are not required to pay fees and so are not counted. Visitation in fall associated with eagles, and winter ice-fishing (assumed to be about 40 percent of total annual use) are not reflected in these figures. See Appendix D for visitation calculations.

TABLE 12. (Continued)
County Visitation by Percent

| County | Percent visitation in summer '86 |
|------------|----------------------------------|
| Broadwater | 5.3 |
| Cascade | 5.1 |
| Park | 3.7 |
| Carbon | 3.5 |
| Sanders | 3.1 |

Source: Montana On-Site Recreation Survey, Summer 1986, DFWP. The Interviews supplying these figures were taken at five sites; Hellgate, Black Sandy, Ponderosa, Riverside, and Silos. Black Sandy is not in the study area but is similar enough in nature and close enough in location that the data were not reanalyzed to exclude it. The other minor limitation to the figures is that they were gathered at sites that are primarily regarded as campgrounds. No surveys were included from day-use areas where visitation from the local area is presumed to be much higher.

In 1989, information taken from fee envelopes collected from May - September, shows percentages of use very similar to those above. Lewis and Clark accounted for 21.4 percent of use and was followed by Gallatin, Missoula, and Silver Bow, respectively. The most surprising change was Broadwater County's drop in visitation, to 2.0 percent of use. However, this may be attributable to Broadwater County residents' use at non-fee areas, and to resistance to the fee system.

Resident use from 1989 fee envelope data was at 73.7 percent and nonresident use at 26.3 percent. This is about twice the nonresident use seen from any previous survey. It either means that there is a dramatic downshift in resident use, an increase in nonresident use, or more likely, that nonresidents more readily paid fees. A 1989 recreation survey conducted for MPC showed a 25 percent nonresident visitation rate but it collected data only at Riverside within the study area. Therefore, nonresident use is assumed to be about 25 percent for 1989.

Group size has substantially decreased from 1986. In that year, DFWP was assuming a group size of 2.96 (Montana Department of Fish, Wildlife and Parks 1986). For 1989, fee envelope data, anglers surveys, and the MPC recreation survey at Riverside all show group size at about 2.5 persons per vehicle. MPC recognized a drop in group size from 2.9 persons per vehicle to 2.5 between 1982 and 1989 at Riverside and other sites along Hauser Lake (McCool 1989).

Day Use. In 1984, a student from the University of Montana prepared a document entitled A Study on Fee Systems, Day-Use and Visitation, Canyon Ferry State Recreation Area, Summer 1984 (Nelson 1984).

An attempt was made to distinguish between overnight vs. day-use of Hellgate. Over a 28-day period, overnight use totaled 1,131 vehicles or 80 percent of use. Day-use totaled 235 vehicles.

In comparison, the same study analyzed day-use at four recreation sites on the west shore that were designated for day-use only in 1979: Lorelei, Lewis and Clark, Orchard and Crittendon. Through vehicle count and observation, it was found of 388 vehicles observed, that 88 percent at these four sites were from Lewis and Clark County. Five percent of visitors were from out-of-

state, one percent from both Townsend and Butte, respectively, and two percent from Boulder. From these data, it is obvious that local visitation is proportionately much higher for day-use areas than at the campgrounds.

Winter Visitation. Winter visitation surveyed in the Montana On-site Recreation Survey for the winter 1986-87 revealed a slightly different pattern of visitation than that of summer. About 95 percent of the visitation was from in-state with the vast majority coming from Lewis and Clark County. Silver-Bow followed and Gallatin, Cascade and Missoula counties contributed lesser percentages than in summer, but higher than other counties. The sample size taken was small, 111 people, so the results are slightly less accurate than the summer sample of nearly 600 interviews.

Angler surveys conducted by DFWP between the winter of 1985/1986 and 1989/1990 show that about 30 percent of all anglers on Canyon Ferry were from Lewis and Clark County, followed by Gallatin (23.2 percent) and Broadwater (13.8 percent) counties. Only 1.2 percent of winter anglers surveyed were nonresident.

Visitor Distribution

It is estimated that 80 percent of the summer use of Canyon Ferry is at the north end of the lake (Tom Campbell, pers. comm., 1/24/91), leaving much of the area underutilized. This pattern is attributable to the north end's more sheltered topography, shade trees, relatively calmer winds, numerous beaches and recreation sites, and ease of access for the Helena-area population which contributes the highest percentage of use. During the winter, much of the use shifts to the south end of the lake for ice-fishing.

Visitor Preferences and Attitudes

A wide variety of activities are pursued at Canyon Ferry. Some of these such as camping, picnicking, fishing, and boating are common and to a greater or lesser degree, provided for by managing agencies. Uses are sometimes in conflict. Particular complaints have been made about sports involving machinery such as jet skis, all terrain vehicles (ATVs), and jet boats (see Community Services and Noise).

At public scoping meetings associated with this study in February, 1991, fishing was listed as the number one use of Canyon Ferry. Opinions were given as to the level of recreational development at the park. Many users wanted more improvements, similar to the level provided at national park sites. Others felt that there should be primitive campsites available as well. Primitive campsites have been a management dilemma for park staff. For instance, at Goose Bay and Cottonwood, where no water or campsite identification exist, sites are sometimes have been used for weeks to the exclusion of other campers. Complaints arise about sanitation, lack of services, poor road access, and vandalism. Staff has also had difficulty collecting fees in these less-managed areas. In the summer of 1991, Confederate and Goose Bay were designated "pioneer" campsites with limited-stay restrictions, requirements for self-contained units, fire prohibition, and trash pack-out requirements. No fees will be charged here because of the lack of services. These sites will remain under the pioneer camping restriction as long as natural resources are respected by users or until administrative costs are prohibitive.

Summer. The 1986 On-Site summer survey showed that most visitors had used the area before (62 percent), were highly satisfied (88.7 said they would return), and that most stayed for more than a day (61.8). Of those that camped, 37 percent stayed for two nights while 18.9 stayed for one night and 14.2 percent stayed for three nights. Surprisingly, 8.1 stayed for eight to fourteen nights, indicating a fairly large percentage that plan a major vacation at the park. Fifty-eight percent said that they planned one to five similar outings over the season, and 24.6 percent planned six to ten outings.

DFWP assumed an average group size of 2.96 persons per vehicle at Canyon Ferry in 1986. Fee envelope data for 1989 show a decline in that number. Out of 13,000 respondents that did list persons per vehicle, the average number was 2.4, a substantial reduction.

The top fourteen activities by participation rates were (all others were less than one percent):

TABLE 13.
Activities by Participation Rates for Canyon Ferry

| | |
|----------------------|--------------|
| fishing | 13.2 percent |
| camping | 10.7 |
| relaxing | 11.1 |
| motorboating | 9.1 |
| picnicking | 8.1 |
| swimming | 6.9 |
| sunbathing | 6.3 |
| scenic viewing | 5.8 |
| walking/hiking | 5.3 |
| waterskiing | 4.8 |
| reading | 4.1 |
| photography | 2.3 |
| visit historic sites | 1.5 |
| horseshoes | 1.0 |

Source: Montana Department of Fish, Wildlife and Parks 1986.

Visitors were also asked to list their main activity at that site. Fishing, camping, and boating were by far the most frequent replies.

A number of questions were asked about facility preferences and condition. The majority of people were satisfied with most facilities. Forty-four percent said that more camping facilities were needed followed by more fishing and motorboating facilities at 19.4 and 7.8 percent, respectively. When asked about satisfaction with existing facilities, the highest rates of dissatisfaction were expressed with latrines, water supply, and boat docks. Highest rates of satisfaction were voiced about roads, parking, and picnic areas. In this same vein, when asked about preferred road improvements, 54.2 percent preferred gravel roads and 22.5 paved roads.

Day Use. The 1984 Visitor Study (Nelson) is the most recent information gathered for Canyon Ferry showing day-user preferences. The analysis of day-use interviews showed that the majority of the users were there to swim and sunbathe. The overwhelming majority felt that facilities were adequate (81 percent).

Winter. The winter 1986-87 On-Site Visitor Survey (DFWP) showed that the vast majority of users were repeat-visitors to the site and that the majority stayed for one day or less (90 percent). Seventy percent had four or less people in their group.

The overwhelming majority was there to fish; 78 percent. Secondary activities were camping 27 percent and walking at 14 percent. Rest rooms were listed as the facility most needed at the site visited. This was followed by boat ramps 14 percent, and beaches at 10 percent (probably indicative of better access to fishing waters). The most important feature to enjoyment of the site mentioned was access to water. Visitors were asked what other activities they pursued while in the area. Twenty-three listed visiting friends and relatives and 23 percent listed shopping. Ninety-three percent said they would return.

Preferences of Overall State Park Users

In 1988, the University of Montana Bureau of Business and Economic Research conducted a survey of visitors to state park and fishing access sites to determine their activities, facility preferences, and expenditures associated with recreational visits. The results of this survey give a general picture of what the "average" person visiting Montana recreation sites (as opposed to cultural, natural, or fishing access sites) prefers.

Findings showed that recreation site visitors were primarily Montana residents (75 percent), and that the primary reasons cited for their visits were overnight camping, fishing, swimming, sightseeing, motorboating, and waterskiing. Those surveyed were asked to indicate those features and services they thought were important to their enjoyment at the recreation site, and which facilities were in need of improvement. An overwhelming 84 percent said that access to recreational waters was the most important feature. This was followed by overnight camping and boat ramp facilities. Facilities mentioned as most in need of improvement were rest rooms (33 percent), water supply (31 percent), and picnic tables (23 percent).

2.11.4 Facility Description and Capacities

Facilities

There are 24 designated camping and day-use sites at Canyon Ferry State Park. In addition, there are three unimproved areas that are frequently used (Badger Bay, Avalanche Bay, and Confederate), and areas of shoreline that are now reached by walking or unauthorized off-road vehicle use. (See Table 8.)

Twelve of the sites offer organized or informal camping facilities. Except for the undeveloped or boat access only sites, all offer picnic and day-use facilities. Six of the sites have boat ramps and eight have designated swimming areas. There are four group-use sites. Two of these, Chalet and Silos, were designated and designed as such. Hellgate and Jo Bonner have been used a group sites without attendant signing or large group facilities.

Capacities

Capacity Analysis. Capacities are no longer based solely on physical space available but rather on a variety of natural resource conditions, institutional controls, and social preferences. In order to conduct a usable capacity analysis at Canyon Ferry, an extensive amount of additional information is needed. This includes: a land survey of the camping and day-use areas and an inventory of the physical space available; a calculation of the number of spaces available based on national recreation standards; a resource inventory and use/damage evaluation; an assessment of visitor needs, preferences, and conflicts; and management goals and objectives.

In light of the lack of available information, an inventory of the current management practices and available facilities has been provided instead.

According to the park manager, public camping areas and day-use sites are rarely filled to the point that all available facilities are being used. (There are also concession-related camping facilities that are not covered here). The exception to this is on three peak holiday weekends; Memorial Day, Fourth of July, and Labor Day. At these peak times, visitation generally exceeds the developed spaces at all of the park campgrounds and spills over into undeveloped spaces. For instance, Silos has 24 developed spaces but has been known to handle up to 200 camping parties during high visitation (Tom Campbell, pers. comm., 4/11/91). (See Table 14).

The following is an assessment of existing facilities at Canyon Ferry for both camping and day-use. For the camping figures, developed sites are delineated by some physical marking such as a fire pit or parking place but are not necessarily numbered. Undeveloped sites indicate the estimated additional spaces available at that particular camping area.

The exceptions to this are at Hellgate, Silos, and Riverside where the method of estimating additional available space is also limited by the number of toilets, the capacity of access roads, and the ability to handle solid waste disposal. Ultimate physical capacity at these areas is potentially greater. Historically, management has allowed overflow camping in undeveloped areas. The exception is at Court Sheriff/ Ponderosa where the campground is closed when the designated campsites are filled.

TABLE 14.
Campground Capacities

| Camping Area | Developed Sites | Undeveloped Sites | Park- ing |
|-------------------------|--------------------|----------------------|--------------|
| Riverside | 34 | 100 | 75 |
| Court Sheriff/Ponderosa | 42 | 0 | 10 |
| Chinaman's | 31 | 10 | 10 |
| Jo Bonner | 2 | 15 | 10 |
| Hellgate | 61 | 100 | 200 |
| Indian Road | 9 | 20 | 25 |
| Silos | 24 | 100 | 200 |
| White Earth | <u>30</u> | <u>20</u> | <u>20</u> |
| | 233 | 365 | 550 |

Source: Montana Department of Fish, Wildlife and Parks 1991.

Goose Bay, Confederate and Cottonwood are camping areas with no designated campsites. Therefore, their capacities are in addition to the above but difficult to estimate.

Day-use areas are limited by the number of available parking spaces. None of the day-use areas have land available for parking expansion with the possible exception of Crittendon. However, expanding parking here would be limited as well by sloping terrain and associated grading costs. At peak visitation times, parking at the day-use areas flows over onto West Shore Road. Although this is not a desirable situation from a safety standpoint, it is tolerated since it occurs fairly infrequently, such as during special group events.

TABLE 15.
Day-Use Capacities

| Day-Use Area | Parking Spaces |
|----------------|----------------|
| Cave Bay Point | 10 |
| Cottonwood | 100 |
| Crittendon | 25 |
| Orchard | 10 |
| Lewis & Clark | 25 |
| Lorelei | 15 |
| Overlook | 15 |
| Fish Hawk | 15 |
| Shannon | 30 |
| Little Sandy | <u>8</u> |
| TOTAL | 253 |

Source: Montana Department of Fish, Wildlife and Parks 1991.

From the above figures, the present availability of camping facilities at Canyon Ferry, taking into consideration staff management capabilities, is 598 spaces, including the undeveloped sites at manageable levels. At 2.5 persons per vehicle, these facilities would accommodate about 1,495 people when all available spaces were being used, all other considerations notwithstanding. In addition, 253 developed parking spaces for day-use would accommodate 633 persons, with additional undesignated parking available at Confederate, Hellgate and Goose Bay.

2.12 TRANSPORTATION

2.12.1 Access

The major highway serving the region is U.S. Interstate 15, a north-south route from Canada to the Montana border at Monida. This road connects Helena and Great Falls, and intersects State Highway 12-287 that parallels the west shore of Canyon Ferry. Highway 287 intersects a number of feeder roads that provide access to the lake's east and west shores (see Figure 13). Secondary roads include Highway 284 that begins, from the north, five miles east of East Helena and turns north off of Highway 12-287. Here, it is also known as Spokane Creek Road. It intersects Canyon Ferry Road about 4.5 miles to the north where it takes on that name. From here it continues northeasterly across Canyon Ferry Dam, passing around the northern end of the



**CANYON FERRY
RESOURCE MANAGEMENT PLAN**

Figure 13
Major Road Access

reservoir and down the east shore where it rejoins Highway 12-287. Recreation sites on the east shore are accessed by feeder roads off of Highway 284.

From the west and north, Canyon Ferry Reservoir is also accessed locally by Canyon Ferry Road. This is a major arterial that begins at the eastern city limits of Helena.

Two minor arterials that access both cabin sites and recreation areas are East and West Shore roads. East Shore Road turns off of Canyon Ferry Road at Jo Bonner recreation area. It forks, winding along the shoreline about 2.5 miles to the southeast and about 1.5 miles to the northwest. East Shore Road accesses the majority of the lake's cabin sites, and Cave Bay and Jo Bonner recreation areas. West Shore Road turns off of Canyon Ferry Road at Yacht Basin, curving along the rather precipitous west side, accessing more cabin sites and seven public day-use areas. Jimtown Road connects Canyon Ferry with the York and Hauser Lake areas, intersecting Canyon Ferry Road near the turnoff to Riverside.

2.12.2 Road Condition and Maintenance

Canyon Ferry Road is paved from its junction with Highway 284 to Magpie Gulch. From here to the Broadwater County line it is gravel surface. From the Broadwater County line where it again is called Highway 284, it is paved. All of Spokane Creek Road/Highway 287 is paved. With minor exceptions, all of the remaining access and interior roads are gravel surface; about 38.5 miles of road.

Lewis and Clark County maintains Canyon Ferry Road and Spokane Creek Road. The county chip-sealed the surface of Canyon Ferry Road from Diehl Lane to the end of the pavement at Magpie Gulch, and regraded and widened the curves on the remaining gravel portion (summer 1990). The county is also responsible for the maintenance of Jimtown Road, for the access road to Riverside, and for a short portion of road into Yacht Basin.

Broadwater County maintains Highway 284 to the Lewis and Clark County line, about 1/4 mile of Hellgate Road from the turnoff at Highway 284 to the cattleguard into the recreation area, as well as all roads accessing the lake on the east side up to Reclamation land boundaries. On the west shore, the county maintains the access roads to White Earth and Silos recreation areas up to the Reclamation land boundaries. Budgets and maintenance schedules are adequate for the level of traffic (John Masolo, Broadwater County Road Foreman, personal communication, 11/8/90).

The State of Montana maintains Highway 287, a Federal Aid Primary (FAP) road. All of the remaining roads accessing the lake are maintained by the DFWP.

DFWP maintains about 4.5 miles of West Shore Road from Yacht Basin to its terminus, and about 4.0 miles of East Shore Road. West Shore Road is maintained more frequently because it serves many of the most-heavily used day-use sites. In addition, roads maintained as interior access to recreation sites total about 30 miles.

DFWP conducts annual spring and fall maintenance of its road system. Occasionally, a major storm event occurs between regular maintenance schedules, requiring unbudgeted expenditures that can strain the road budget. Since 1985, maintenance has also included the application of magnesium chloride to control dust on all unpaved roads.

The USFS maintains roads leading up many of the gulches to Forest lands on the east and west sides of Canyon Ferry.

2.12.3 Traffic Volumes

Traffic is generated primarily by two groups: seasonal and permanent residents, and recreationists whose use peaks in the summer.

The Montana Department of Transportation (MDT) maintains traffic counters at various locations around the lake. The average daily traffic counts (ADTs) are adjusted annual figures and do not reflect peak traffic. Generally speaking, peak months of traffic on roads around the lake are June, July, and August (see Table 16).

The following traffic counts reflect traffic usage around the lake for the past ten years. Generally, traffic gradually increased over the decade, peaked in 1986-1987 and showed a slight decline since then. Highway 287 at the south end of the lake is the major exception to this observation, perhaps because it carries traffic that is unrelated to Canyon Ferry. It is also clear from these figures that the north-end roads are more frequently used. There are no capacity problems on any of these roads at present (Phil Colberg, MDT, personal communication, 11/7/90).

TABLE 16.
Traffic Counts on Canyon Ferry Access Roads 1981-1989

| <u>Location</u> | <u>1989 ADT</u> | <u>10 YR Av.</u> | <u>Peak Yr.</u> |
|--|-----------------|------------------|-----------------|
| Hwy. 287 at turnoff to Spokane Ck. Road | 3340 | 3160 | 1988 |
| Spokane Ck. Road just north of Hwy. 287 | 400 | 430 | 1984 |
| Canyon Ferry Road just east of the intersection with Spokane Ck. Road | 900 | 1000 | 1987 |
| Canyon Ferry Road at the southwest corner of the dam | 740 | 700 | 1986-87 |
| Canyon Ferry Road .5 miles west of Magpie | 570 | 500 | 1986 |
| Hwy. 284 near Gurnett Ck. Road | 190 | 210 | 1981 |
| Hwy. 284 .5 miles north of Townsend airport | 560 | 540 | 1987 |
| Hwy. 287 .5 miles north of the Missouri Bridge | 3180 | 2800 | 1989 |

Source: Montana Department of Transportation 1991.

In 1987, DFWP initiated a traffic count system on some of the interior recreation area roads. As traffic counters became available, more roads were added to the system. Traffic counts are available for one to four years on the roads listed below. Counts are based on an 11- to 12-month period and so are considered annual. However, readings were not made in a consistent manner and or on a set schedule and so are not always comparable between years. For that reason, only 1990 counts are listed. These will establish a baseline traffic year. If further information is needed on previous years it may be available at the DFWP Canyon Ferry office. Where counts were available for a period of three to four years, they revealed a drop in traffic at most locations. For instance, traffic on West Shore Road dropped from 73,046 trips per day (tpd) in 1987 to 56,946 tpd in 1989. Hellgate recreation area dropped from 31,934 tpd in a 6-month measurement period in 1987 to 20,216 in an 8-month measurement period in 1989.

TABLE 17.

Available Traffic Counts on Internal Access Roads, 1990.

| | | |
|---------------|--------|--------------------------------|
| Chalet | 27,302 | (counts for West Shore Rd.) |
| Riverside | 38,582 | |
| Court Sheriff | 9,196 | (closed November and December) |
| Ponderosa | 7,393 | |
| Chinaman's | 6,642 | |
| Hellgate | 10,221 | |
| Silos | 40,000 | (counter was over-counting) |
| Indian Road | 12,277 | |
| White Earth | 7,852 | |

Source: Montana Department of Fish, Wildlife and Parks 1991.

2.12.4 Safety Issues

Many of the roads in the study area, including the 90 degree turn onto the dam itself, are narrow and winding. Coupled with graveled surfaces, road hazards are inevitable, and have been a lingering concern of area managers. Some area roads are built above steep embankments without benefit of guardrails (e.g., East Shore Road, creating a safety hazard.)

There are no paths or trails set aside exclusively for pedestrians or bicyclists, except for the disabled-accessible trails to restrooms. Pedestrian and bicyclist safety has been cited as a potential hazard on the area's narrow winding roads; specifically along West Shore Road, and along Canyon Ferry Road between Yacht Basin and the dam.

2.12.5 Proposed Improvements

Lewis and Clark County has listed the reconstruction of about 9.5 miles of Canyon Ferry Road east of Helena as priority #6 for FAS/FAP funding. The estimated cost of this project is \$2.5 million, and date of completion sometime after 2001.

The county also has an improvement priority list for low-cost mitigations for existing traffic hazard areas. As of October 1988, two of the top priority improvements were for signing and painting portions of Canyon Ferry Road; on curves and at the intersection of Canyon Ferry Road and Valley Drive.

In Broadwater County, the road foreman felt that the primary safety improvement needed was the widening of a bridge on lower Duck Creek Road where the road narrows from a 24-foot width to a 16-foot bridge. This portion of road is travelled by recreationists using the lake. The paving of about 2.5 miles of Highway 284 from Avalanche Creek to the Lewis and Clark County line was completed in 1992.

The road accessing White Earth is sloughing into the reservoir along a 20-foot embankment. DFWP has proposed rerouting this road either onto Reclamation lands or by purchasing an easement from the adjacent landowner. Reclamation is reluctant to approve the reroute on its lands because productive grassland habitat is involved. In any case, a guardrail may need to be placed here as well to protect public safety. Funding is yet to be approved for this project.

2.12.6 Unauthorized Off-Road Vehicle Use

A proliferation of roads and trails from the use of off-road vehicles has caused damage to vegetation and soils in the state park. Vehicle use is allowed only on roadways or on specifically designated off-road vehicle use areas. No such areas have been designated at Canyon Ferry (see Figure 14). Examples of resource damage can be seen on steep hillsides above the campgrounds on the north shore.

Reclamation staff has been only partially successful in deterring off-road vehicle use by fencing off access. This has occurred for a variety of reasons. Low water exposes land below the fenceline which then becomes accessible to vehicles. Where terrain precludes accessibility to some larger vehicles, it remains open to all-terrain vehicles (ATVs). Where roads are built inside the boundary fence, they provide access once again, to the remainder of the shoreline (e.g., Confederate, Duck Creek, and Silos).

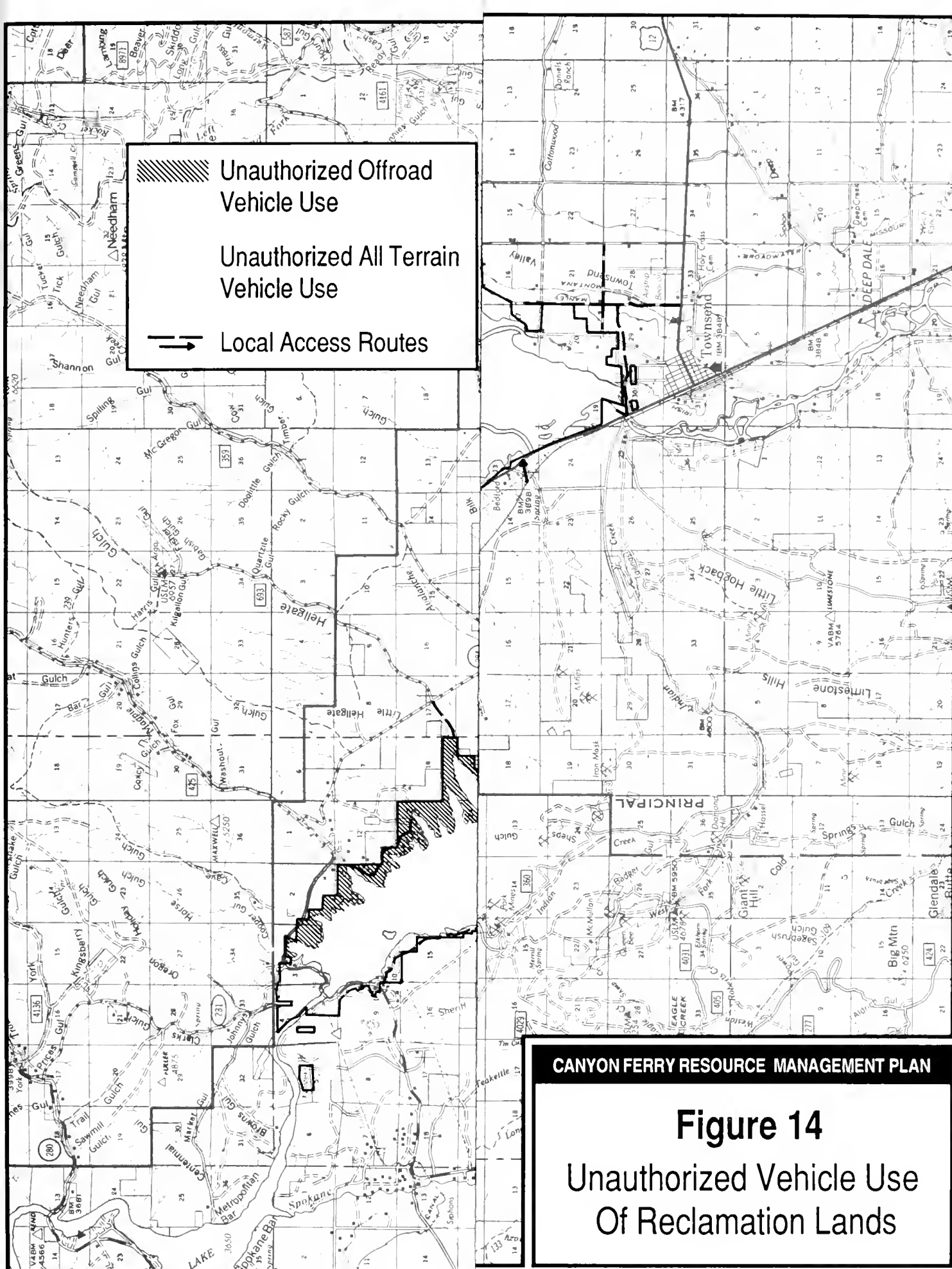
2.12.7 Disabled Access

Disabled-accessible facilities are a recent addition to the State Park. In 1991, accessible parking pads, trails to restrooms, and accessible restrooms were added to Silos, Shannon, and Riverside. In addition, Riverside maintains a disabled-accessible boat dock.

A concrete ramp accessing the main entrance to the Community Center, and exterior access to the downstairs bathrooms were added in November 1991 (Pat Gubbins, pers. comm., 9/10/91).

2.12.8 Other Concerns

Reclamation has an easement on French Bar Road to maintain the dam and pump house. DFWP has managed the area below the west side of the dam as a fishing access area. Residents along French Bar Road wish to have more participation on the part of the agencies in road maintenance.



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 14
Unauthorized Vehicle Use
Of Reclamation Lands

2.13 CULTURAL RESOURCES

Intensive cultural and paleontological resource inventories have been conducted in the study area since the mid-1940s when it was chosen as a reservoir site. All of the studies reveal an abiding richness of prehistoric and historic resources associated with the perennial abundance of the Missouri River.

All earth-modifying activities on federal land are subject to completion of the process required by Section 106 of the National Historic Preservation Act and 36 CFR Part 800. Managing agencies must coordinate with Reclamation to complete these processes. The State Historic Preservation Office should be contacted for input on this subject.

2.13.1 Paleontological

The paleontological sites studied contained vertebrate and plant remains of the Tertiary Age. The Tertiary deposits in this part of Montana tend to be more visible and produce more fossils than elsewhere in the state.

2.13.2 Archeological

In the 1940s, the Smithsonian Institute, the National Park Service, and Montana State University conducted reconnaissance level archeological surveys and excavation of sites within the area that would be inundated by the reservoir. Findings revealed twenty-two prehistoric Indian sites ranging from extensive campsites to caves and rock shelters, tipi rings, and petroglyphs. It is probable that some of these sites dated back to several thousand years, while others may have been inhabited by tribes in more recent pre-history or early historic times (Helena Independent Record July 3, 1949).

During the 1970s and 1980s, several large- and small-scale archeological surveys sponsored by the National Park Service and Reclamation were conducted at Canyon Ferry. In all, about 8,500 acres, including the shoreline belt above and below maximum pool level, were examined. Numerous historic, prehistoric and paleontological sites were recorded.

In 1985, Reclamation contracted with Historical Research Associates to analyze a collection of artifacts including 3,649 flaked stone artifacts, 33 ground stone tools, and three metal arrowheads. The analysis indicated 10,000 years of intermittent occupation along this stretch of the Missouri. Prehistoric sites are located all around the reservoir but many are inundated by water.

Further work at these and other sites has the potential to yield information important to the prehistory of the region.

Many of the sites at Canyon Ferry have been determined eligible for the National Register.

2.13.3 Historic

A photographic record of most of the historic sites inundated by the reservoir and surrounding it were taken by Reclamation in the late 1940s.

2.13 CULTURAL RESOURCES

Intensive cultural and paleontological resource inventories have been conducted in the study area since the mid-1940s when it was chosen as a reservoir site. All of the studies reveal an abiding richness of prehistoric and historic resources associated with the perennial abundance of the Missouri River.

All earth-modifying activities on federal land are subject to completion of the process required by Section 106 of the National Historic Preservation Act and 36 CFR Part 800. Managing agencies must coordinate with Reclamation to complete these processes. The State Historic Preservation Office should be contacted for input on this subject.

2.13.1 Paleontological

The paleontological sites studied contained vertebrate and plant remains of the Tertiary Age. The Tertiary deposits in this part of Montana tend to be more visible and produce more fossils than elsewhere in the state.

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2.13.3 Historic

A photographic record of most of the historic sites inundated by the reservoir and surrounding it were taken by Reclamation in the late 1940s.

Blackfeet, Gros Ventre, and Shoshone Indians are the historic tribes of this region. Tribes do not appear to have had permanent habitation sites here but tipi rings, occupation sites, hearths, caves and shelters, kill sites, and pictographs have been found in the area (Westby 1954). Early settlers talked of native American trails and campsites now inundated, and a major crossing of the river just north of Townsend near the mouth of Spring Creek. This has been documented by Greiser (1986). Indians were seen on the Missouri River bottomlands at the mouth of Beaver Creek, near the mouth of Avalanche Gulch, and at Dry Creek. Most of these groups were trapping and hunting parties. Although there was some horse-stealing from the mining camps, and concern about Indian attacks lingered through the mid-1800s, no major conflicts have been recorded in this area. By the 1870s, Indian traffic through this portion of the valley had virtually ended.

In 1805, Lewis and Clark made three camps in the area; just above the old town of Canyon Ferry on July 21, on one of ten islands near the mouth of Duck Creek on July 22, and near Townsend on July 23. On their entry to the area, they describe the mountains suddenly falling away and a beautiful and extensive plain ten or twelve miles wide extending as far up river as the eye could see. In the following year, Sgt. John Ordway floated downstream through this area. From then until the mid-1860s, trappers, traders, and surveying expeditions shared the valley with the Indians.

About that time, gold was discovered in Last Chance Gulch in Helena. Discoveries were subsequently made on French Bar, just below the current dam site; Cave Gulch; White City in White Gulch; and Diamond City in Confederate Gulch, near the crest of the Big Belts. Cave Gulch was named for the common collapse of its mine shafts. Canyon Ferry Village lies on part of the former site of Cavetown, a village of about thirty hewn log houses that were abandoned by 1876 (Mattes 1949). Diamond City was once the most prosperous mining town in Montana. Confederate prisoners exiled to Montana in 1864 made the first strike here, giving the gulch its name and producing the richest mine on record in the United States. "One day's cleanup netted 700 pounds of gold, amounting to \$114,800, taken out by twenty men using wheelbarrows to dump the dirt in sluice boxes" (Westby 1954).

These discoveries led to a tremendous influx of gold seekers, causing many new mines to be opened in the late 1860s and 1870s -- mines and gulches that bear the names of present-day recreation sites at Canyon Ferry -- Confederate, Whites, Cave, Avalanche, Hellgate and Magpie. At one time during the peak of the gold rush, an estimated 10,000 people were mining the gulches around Canyon Ferry. Silver mining also contributed an influx of miners at this time. Hard-rock mining continued in the area until the early 1900s but was less lucrative. But those who could not make a living mining turned to the land as a means of survival. This agricultural base proved essential in the early 1890s when the placer mines were exhausted and the silver market collapsed.

Transportation between the early-day settlements became essential. Diamond City and White Sulphur Springs were connected with Helena by a stage road, a trip of about 2.5 hours. The crossing of the Missouri River was by a ferry established by John Oakes in 1865, and named Canyon Ferry because it was at the point where the river narrowed at Black Rock Canyon. Court Sheriff eventually assumed the ferry operation and held land upon which a small town grew, associated with the ferry. Remnants of this town were visible until the reservoir was flooded. The Sheriff residence was saved and moved to a site just north of present Canyon Ferry Village,

where it serves as a residence. The present Canyon Ferry Village community center once served as the school house at old Canyon Ferry.

On the east shore about six miles north of Townsend, was the town of Canton, once a supply center for farms and nearby mining communities. Canton was located in the middle of the flat river plain, surrounded by farms. St. Joseph Church, now standing along Highway 284 south of Duck Creek Road, is one of the oldest surviving church structures in Montana, dedicated near Canton in 1876 (Helena Independent Record July 3, 1949).

Not to be ignored is the relative abundance of agriculture in this Missouri River valley prior to inundation by the reservoir. Thomas P. Roberts, who made a reconnaissance trip from Three Forks to Great Falls in 1872, recognized this section as "one of the best grazing and agricultural districts of this mountainous territory".

During the 1880s, attempts were made to navigate the upper Missouri for freight and passenger business. Considerable trade was established by W.F. Wheeler and Judge N. Hilger before undependable revenue and the hazardous conditions of the river halted the endeavors. Steamboats were also unable to compete with the railroads that served the region by the mid-1880s. Agriculture and small enterprise had an economic base strong enough to keep the region growing and in 1894, Helena became the state capital.

In the early 1890s, several businessmen from Helena proposed a dam at Stubbs Ferry, 10 miles below the present Canyon Ferry Dam, but plans were unsuccessful. Helena Water and Electric Power Company, the second group wanting to use the waters of the Missouri, started dam construction just above old Canyon Ferry Village in 1896. The wood and earth dam and power plant were finished in October, 1898, creating Lake Sewell, seven miles long and two to three miles wide. The lake submerged portions of the Sheriff property, other ranch property, and portions of the old stage line. The river below the dam was so rough that the ferry had to be abandoned and the river had to be crossed in rowboats upstream until a bridge was built in 1899. Electrical power was supplied from the dam to the smelter in East Helena. The newly formed Missouri River Power Company purchased the dam and power station in December 1900, but due to financial problems, the company merged with United Missouri River Power Company in 1911, becoming Missouri River Electric and Power Company later that year. In 1912, the dam and power plant was again sold--this time becoming property of the new Montana Power Company (MPC).

It remained in the control of MPC until early 1950 when Reclamation purchased it. The purchase of the old dam and power plant was to make way for a new dam that had been started in July, 1949, in spite of protest from farm families whose lands would be flooded by the project. The purchase was made as part of the Missouri River Basin Project, authorized by the Flood Control Act of December, 1944. The dam was finished in April, 1954 when the plant began to produce electricity.

Other remnants of history exist in the area's cemeteries. The reservoir inundated the former Beaver Creek Cemetery and isolated Canyon Ferry Cemetery from the shore on what is now Cemetery Island. The Beaver Creek graves were moved to Helena, Townsend and Winston according to the wishes of families. The oldest grave at the Beaver Creek site was that of a young Alice Wimpey who according to hearsay, died on a wagon train en route to Helena in

1867 (Helena Independent Record November 24, 1949). Graves at the Cemeteries site on the east shore date back to the late 1800s.

About 50 graves remain on Cemetery Island. Many of the graves are from the late-1800s, the oldest dating back to 1874. Vandalism and neglect of the cemetery has prompted actions by the DFWP and CFRA to initiate a four-phased program to recognize, preserve, and maintain the site.

In the January 31, 1965 issue of the Helena Independent Record an article written by Bob Cooney reveals that there was an attempt made to change the name of Canyon Ferry to Broadwater. Apparently, this proposal was defeated.

No historical sites currently listed on the national or state register are located in the study area.

2.14 NOISE

Noise conflicts at Canyon Ferry primarily center around the use of a variety of motor vehicles in proximity to recreation sites or cabins. No noise measurements have been taken in conjunction with the management of Canyon Ferry, so current sound levels have not been established.

The primary area of conflict is the north reservoir where about 80 percent of the recreational use occurs and where the cabin sites are located. Sounds are also magnified in certain areas by echoes off of surrounding canyon walls (see Environmental Constraints for sensitive noise areas).

The use of jet skis in confined bays such as Magpie, Court Sheriff, and Hellgate has raised complaints from both cabin site lessees and recreationists. A common use of the machines is to drive them in a circular pattern within the bay, generating a continuous source of noise. This conflict has not been resolved despite communication between the two groups.

The 1991 legislature passed HB 833 establishing noise standards for all vessels including jet skis; 90 dbA at one meter from the point of exhaust. For comparison, under normal operation, a motorboat produces about 72 dbA at 50 feet from the source.

The use of jet boats at Canyon Ferry has also caused numerous complaints. Once again, the boats are able to meet noise requirements if properly operated. However, they can be run in such a fashion (violating equipment standards) that noise limits are grossly exceeded, often the case in the past. DFWP's response has been to discourage the use of improperly equipped boats by early contact with the operators.

In general, noise "infractions" at Canyon Ferry have been dealt with by the presence of enforcement personnel, by visible presence, and through policy adoption. A prohibition of particular vehicles or sources of noise is not likely since DFWP relies on existing noise standards and nuisance laws instead.

2.15 VISUALS

By and large, Canyon Ferry State Park appears remote and, for the most part undeveloped. This is partially because it is visually separated from Helena by the Spokane Hills, and because it is

defined to the east and west by the grass- and tree-lined slopes of the Belt and Elkhorn mountains.

As visitors descend to the shoreline roads from the north into Yacht Basin, they are greeted by Ponderosa pine-studded hills of varied height and shape. The lake stretches languidly from the foreground to the distant background--on a clear day, a sheet of shimmering blue.

Driving from Yacht Basin along the west shore, the viewer winds along a tree-lined road, catching occasional views of the lake and hills on the east shore. From many of the recreation sites, the cabin sites and development along the north shore is visible. These, as well as many of the long-range views of development at Canyon Ferry, are fairly unobtrusive, partially because development is masked by distance, topography and vegetation. Views from most of the west shore looking east are of low-lying hills against the backdrop of the Belt Mountains.

From Yacht Basin travelling north and east, the first major physical interruption to the character of the area is the dam itself. Even from the dam, the surrounding hillsides are largely undisturbed. The viewer is confronted with the most heavily developed area along the shoreline between Canyon Ferry Village and Magpie Bay.

Continuing south along the east shoreline, the viewshed is relatively undeveloped, with a broad agricultural valley stretching south and the low-lying plains and Elkhorn Mountains rising from the west. The sharply-incised cliffs at White Earth are visible from the mid-eastern shore. Along here second home, cabin site, and large-lot development is visible both from the access roads, the water, and from some of the recreation sites.

At the south end of the lake, the landscape closes in around the ponds and shoreline, focusing the viewer on the water and wildlife's abundant activity. Riparian vegetation such as willows dominates the foreground.

Continuing up the west shore, recreation sites are availed of long-range views of both the Belts and Elkhorns. The foreground is prairie grassland. Between White Earth and the end of the west shore road, lands descending to the lake are undeveloped and inaccessible. Cabin sites and Yacht Basin Marina are visible from both land and water along the northwest shore.

At the present time, visual concerns are most evident at individual recreation sites where a lack of vegetation, topography, or screening reduces privacy and/or the recreation experience because of something that can be seen close by. For instance at Jo Bonner, the maintenance yard is on an unscreened hill in full view of the recreation site. At Goose Bay Marina, lack of vegetation and other visual screening around mobile homes and trailers reduces the visual attraction of the adjacent recreation site.

From the water, retaining walls serve to distract from the natural and visual quality of the reservoir. The variety of construction techniques and assortment of materials used for retaining walls has resulted in a myriad of structures, ranging from those that are environmentally compatible to those resembling unrestricted landfills.

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

3.1 INTRODUCTION

Chapter 1 served as an introductory chapter, describing the location of the study area, explaining management, and summarizing issues that surfaced during scoping meetings. Chapter 2 analyzed natural resource and socioeconomic baseline information. While preparing the previous chapters of this plan, public scoping meetings were held and issues identified, field tours were conducted, and discussions were held with staff, the public, and the DFWP Master Advisory Committee. Out of these efforts emerged a clear picture of the critical needs of Canyon Ferry as well as the constraints to development and management, and opportunities for enhancement of the area. Chapter 3 summarizes these needs, constraints, and opportunities in preparation for Chapter 4.

In Chapter 4, specific recommendations will be made for a course of action to address identified needs in light of constraints and opportunities. The next chapter will also set forth recommended policies for management of the area.

3.2 NEEDS

To discriminate between those needs identified by agencies and those voiced by the public, an **A** for agency or **P** for public immediate follows each need statement.

Management

Memorandum of Understanding

1. The current Memorandum of Understanding between Reclamation and DFWP has many addenda and supplements that make the document confusing to use (see Chapter 1.3.2 Memorandum of Understanding).**A**
2. DFWP management authority set forth in the MOU is limited to making rules and regulations for protection of health and safety and preservation of law and order (see Chapter 1.3.2 Memorandum of Understanding).**A**
3. Land management assignments between the Wildlife and Parks divisions may be outdated. Different levels of wildlife management may also need to be set forth in the MOU (e.g., for the Wildlife Management Area (WMA) vs the remainder of the reservoir). See Chapter 1.3.1 Department of Fish, Wildlife and Parks.**A**

Concessions

4. The Department needs to set forth policy on level of investment, amount of debt to be carried, and ownership of facilities at the end of a concessionaire's lease.**A**

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

5. Concessionaires believe they should be allowed to make improvements to concession sites in lieu of annual fees.**P**

6. Concessionaires want to have potential commercial expansion areas identified on Reclamation lands, and first right of refusal on new or expanded services within Reclamation lands.**P**

Entrance fees

7. For certain issues, such as charging entrance fees at concession sites, there is a lack of policy direction (see Chapter 2.9.7 Entrance fees.).**A**

Cabin Sites

8. The 1958 Reclamation Management Plan intended for the cabin sites to be used seasonally. Policy needs to be clarified as to the current intent of the agencies regarding season of use (see Chapter 2.10.1 Cabin sites).**A**

9. Agencies need to address whether cabin site lease fees are adequate, and consistent with other federal lease sites (see Chapter 2.9.7 Cabin Site Fees). The existing cabin site appraisal may need to be updated during the life of this plan, and lease fees adjusted to reflect federal lease policy.**A**

10. Cabin site lessees have been improving sites without environmental review, as required for activities on federal lands under the National Environmental Policy Act (NEPA). This requirement has not been enforced by managing agencies.**A**

11. Some lessees want to change Reclamation's cabin site lease policy so that the sites may be sold to private owners and some members of the public oppose such a sale.**P**

12. Some members of the public support expansion of cabin site leases areas, especially on the south portion of the reservoir. Others oppose such expansion.**P**

Signs

13. Currently, there is no consistent signing program between agencies, and for concessions. Directional, informational, and promotional signing needs to be addressed. Better identification of the area as a state park could include signing on Canyon Ferry and Jimtown roads, at the south end of the lake at the wildlife management area, on east and west access roads, on Highway 287, and eventually at entrance stations (see Chapter 2.10.3 Signing).**A**

Landscaping

14. Many of the recreation sites lack vegetation that could provide privacy, attractiveness, and soil protection. There is no inventory of landscaping needs, nor a budget for plant acquisition and irrigation improvements (see Chapter 2.10.3 Landscaping).**A**

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15. Some elaborate landscaping and irrigation systems have been installed at considerable private expense on public shoreline, outside cabin site lease boundaries. These areas are open to public use and sometimes generate misunderstandings between lessees and the public (see Chapter 2.10.2 Encroachments).A

Fencing

16. Fencing has been installed primarily to deter trespass and unauthorized use of vehicles on Reclamation lands. Deterring vehicular use is difficult for a variety of reasons:

- where access points are provided within the fenceline, vehicular trespass often occurs;
- because the reservoir level fluctuates, a passible land area may become exposed below the fenceline;
- although fences may be built to deter four-wheel-drive trucks, smaller ATVs are able to skirt fencelines;
- and on the west shore, fencing Reclamation lands on such rugged terrain is cost-prohibitive (see Chapter 2.10.2 Fencing).A

Encroachments

17. There are no standards in effect for construction of retaining walls and other appurtenant structures, and in the past, building permits have not been consistently enforced. Because of this, visual and structural quality of retaining walls and other cabin site improvements around the reservoir varies greatly (see Chapter 2.10.2 Encroachments and 2.14 Visuals).A

18. Boat docks, though privately owned and maintained, are to be available for public use. Conflicts have arisen between the general public and boat dock owners who perceive that the docks are for private use only (see 2.10.2 Encroachments).A

19. There is no management policy on grazing, including direction on its use as a management tool, terms of lease, and fee bases.A

Other Management Concerns

20. Interagency communication is often lacking when land use decisions are made (e.g., grazing leases on BLM lands, timber sales within the view- and watershed of Canyon Ferry).A

21. There is no consistent visitation record for Canyon Ferry (see Chapter 2.11.3 Visitation Statistics). The lack of accurate visitation and visitor survey data severely restrict the ability of recreational planners to anticipate visitation trends and peaks, capacities, and to plan facilities.A

22. From 1980 to 1990, Canyon Ferry generated an average of about 50 percent of its operating budget. More recently, the park has generated about two-thirds of its operating budget. However, funds that have been earmarked for other parks are

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

currently funneled into Canyon Ferry's budget because of previous state legislative commitments to the park. The cost of Canyon Ferry management has caused DFWP to consider relinquishment to another agency (see Chapter 2.9.7 Fiscal Analysis).A

23. In spite of continued funding allocations, including a DFWP \$368,000 capital construction program during FY90-91, there is an estimated \$3-5 million shortfall to bring existing facilities to public health and safety and lifecycle replacement standards see Chapter 2.9.7 Parks Division Funding).A

24. DFWP regional and on-site staff believe that staffing needs to be doubled (to at least 14 FTEs) in order to properly manage Canyon Ferry. Additional staffing needs are based on comparisons to other similar facilities and the inability to meet public demands for maintenance and enforcement. In light of recent capital improvements and those needed and planned, maintenance responsibilities are expected to increase (see Appendix A Management History for a staffing comparison by BLM and USFS).A

25. The Operators Training Trust (OTT) (see 2.10.3 Operators Training Trust) trains heavy equipment operators at Canyon Ferry, serving as a free source of labor. The OTT cannot perform any job that could be feasibly contracted out. Most OTT projects are considered too small to be economically viable for potential contractors. A project priority list could be developed to integrate OTT projects into the management agency's capital improvement activities.A

26. The public is sometimes confused as to who manages and permits various activities within the park.P

27. Concessionaires and people from the Townsend area have expressed the concern that public agencies should be promoting Canyon Ferry to a greater degree.P

28. The public perception is that much of the park is unregulated.P

29. Townsend residents and political representatives have expressed concern that there is a lack of agency commitment to development at the south end of the lake.P

Geology

No issues were identified.

Soils and Topography

1. Where human activities such as off-road vehicle use and undesignated camping have removed vegetation, erosion has occurred.A
2. Wave action at many recreation sites is eroding the shoreline.A

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

Water Resources and Quality

1. The density of development at the cabin site lease areas concerns county health officials. Effluent from septic tanks may eventually reach groundwater due to fractured bedrock on the west shore, and lack of replacement area for drainfields given the small size of the lots. Many of the lots are now used year-round, contributing a higher effluent load to subsoils. Lewis and Clark County Health Department believes that a long-range plan should be initiated for replacement of on-site septic systems.A
2. A recent study by a Canyon Ferry Limnological Institute (CFLI) student shows increased algal growth in a developed recreation bay versus an undeveloped bay. Based on this preliminary evidence, Lewis and Clark County Health Department believes that waste discharge from developed sites may be having measurable impact on water quality above naturally-occurring nutrients.A
3. Some agricultural practices (e.g., overgrazing, and fertilizer, herbicide, and pesticide application) have increased the sediment, nutrient, and toxin load on the upper Missouri River system. This, in turn, affects water quality in Canyon Ferry.A
4. Occasional toxic blue-green algae blooms restrict water-contact sports for short periods of time in the summer.A
5. Reclamation's operation of the reservoir affects water levels which, in turn, can negatively affect:
 - recreation by exposing docks and shoreline
 - waterfowl by inundating nesting areas and islands
 - fishing in the reservoir by fish escapement, fishing downstream in the Missouri from a lack of flow, and ice-fishing from rapidly receding water levels and associated unstable ice conditions.P
6. The Missouri River Advisory Council's guidelines were revised in 1985 and may need updating due to refinement of data and changes in Montana Power Company's relicensing for Hauser and Holter dams.P

Vegetation

1. Vegetation around heavily-used and sensitive areas has suffered from trampling and compacting, which in turn impacts soils, visual character, the recreational experience, and wildlife habitat.A
2. Known sensitive plant species will need protection when considering future management plans. Individual site surveys will need to determine if there are other rare and endangered species prior to recreational development.A
3. Weed infestations have occurred on Reclamation lands where vehicles and livestock have carried seeds. Weeds reduce habitat value and visual quality, and add substantially to management costs.A

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4. East-side cabin site lessees have requested more aggressive treatment of weeds along roads in their area.**P**

Wildlife

1. Critical wildlife habitat needs to be identified for all wildlife species around the reservoir. Once such habitat is identified, appropriate measures need to be taken to maintain or improve habitat. In addition, the data base on all wildlife species needs to continue to be expanded. **A**
2. Private land adjacent to Reclamation lands harbors some critical wildlife habitat. This needs to be identified.**A**
3. An updated list of raptor nests and species distribution needs to be kept and made available to those managing wildlife resources in this area.**A**
4. Osprey nest sites are expanding around the reservoir and a periodic (three- to five-year) aerial raptor survey needs to be conducted to monitor their nest sites and territory.**A**
5. Habitat quality needs to be enhanced on the WMA for upland game birds, waterfowl, and nongame species. Human disturbance needs to be minimized during critical nesting and brooding periods, and human use regulated to protect wildlife species and habitat. Lessees and adjacent landowners need to be encouraged to leave standing grain for birds using the WMA, and to use best management practices to protect soil and water quality on lease sites. White-tailed deer need to be managed to minimize damage to adjacent private land and crops. Weed control needs to be aggressively pursued on the WMA but is complicated by the need to keep herbicides prescribed distances from water. (For a more detailed description of problems and needs in the WMA, see Canyon Ferry Wildlife Management Area Management Plan, 1992).**A**

Fisheries

1. Many of the needs and issues for fisheries are incorporated into the DFWP Fisheries Management Plan, available from DFWP.
2. Critical spawning streams, Confederate Creek and the Missouri River, will require habitat protection. Beaver, Magpie, and Duck creeks have potential as spawning streams but still suffer from dewatering at critical periods (see Figure 15).**A**
3. Some members of the public strongly support the introduction of walleye into Canyon Ferry to diversify the fishery. A majority of the public, however, wishes to maintain and enhance the trout and perch fisheries (Dick Vincent, pers. comm., 1/21/91). Improvement of the fishery was a primary theme at public hearings for this plan and the Fisheries Management Plan.**P**

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

Climate

1. An additional weather station would be useful for measuring wind velocity, predicting incoming weather systems, and for providing an early warning system for recreationists.A

Air Quality

1. There is a high potential for wind erosion and dust problems within the recreation area.A

Socioeconomics

Population

1. The socioeconomic region is projected to grow by 17 percent in the next 20 years. In addition, out-of-state population is expected to rise. If the percentage of regional population using the reservoir remained constant over the next 20 years, regional use alone would grow by about 33,000 visitors by 2010.A

Public Facilities and Services

2. Park managers need an efficient telecommunications system and a communications evaluation to determine the most cost-effective method(s) for reaching each other around the reservoir. Telecommunications between staff, from staff-to-public, and public communications would all have to be considered.A
3. Boaters sometimes dispose of human waste in the lake.A
4. Fish Hawk, Overlook, Goose Bay, Confederate, and Cottonwood lack either public water supply and toilets, or both. Because of this, waste disposal is an environmental health problem and camping fees cannot be charged.A
5. A mosquito control plan needs to be developed for the delta area prior to any future pesticide application. This plan should assess the environmental impacts that spraying would have on other species and any possible biological control measures.A
6. The public has identified the need for more RV dump stations, especially on the north shore.P

Land Use

Cabin Sites

1. Uses on cabin lease sites may intensify over time, posing the need for additional land use restrictions on sites such as building setbacks and heights, lot coverage, and other standards.A

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

Canyon Ferry Village

2. Canyon Ferry Village is currently used as an administrative site, including offices and employee residences, by reservoir managing agencies, and is used by Canyon Ferry Limnological Institute (CFLI) to operate a seasonal science camp. The presence of large numbers of students on an administrative site creates logistical and safety problems for the managing agencies.A

3. Canyon Ferry Village buildings, 16 in all, are generally in need of major repair, including new roofs, siding, windows, furnaces, and sewer and water lines. Some of the buildings are contaminated with asbestos. The cost of needed repairs is estimated (by Reclamation) to exceed the value of the buildings. Reclamation has further determined that providing housing to Reclamation employees (the original use for most of the buildings) is no longer justified as a project purpose, since adequate private housing is available in the local area. After consideration and study by Reclamation, none of the present buildings are deemed adequate in size or construction to provide the long-term administrative office support needed by the managing agencies.A

Surrounding Land Use

4. As residential and commercial development increases adjacent to Reclamation lands, conflicts between recreational and private uses will increase. Current examples are reduced hunter and resident safety, especially during the antelope hunting season; the desire for direct access to the lake by adjacent landowners; and the need for visual buffer between private and public uses.A

Commercial Uses

5. Commercial expansion of concession sites, and the potential for future commercial land use around the lake need to be addressed in this plan. Concession owners have considered motel uses, and a destination resort has been suggested at the south end of the lake.P

6. There are ten state lands parcels abutting Reclamation lands. Vehicular trespass from state lands onto Reclamation lands may occur due to new state lands access legislation.P

Recreation

1. There is the lack of a focal point for the incoming park visitor; visitors aren't aware of management, enforcement, and opportunities around the lake.A

2. Visitors to Canyon Ferry are often uninformed about vehicular access points, off-road vehicle use, points of interest, and important wildlife habitat.A

3. Access points need to be defined for winter activities.A

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

4. More summer personnel are needed for enforcement. Problems include drinking and loud behavior at night, prolonged camping at undesignated sites, and inefficient collection of fees.A

5. There are current conflicts between recreationists in some of the busier bays and between recreationists and cabin site lessees, especially related to use of jet skis.A

Facilities

6. DFWP staff considers the current maintenance shop inadequate for maintenance purposes; it does not meet OSHA standards, has no ventilation, and is considered small, and unsafe. Heavy equipment cannot be repaired here because it won't fit into the building. This is a substantial drawback in the winter when maintenance is most convenient. DFWP has looked (unsuccessfully) into use of other buildings owned by Reclamation. The cost of replacing shop facilities, including tools, design fees, and a maintenance office, is estimated at \$456,000 (Patrick Gubbins, pers. comm., 6/19/92).A

7. Staff has suggested the need for the following recreation improvements at the park over and above those already identified elsewhere in this chapter:

- a. Little Sandy Beach needs stairs, a toilet, and a pay station.
- b. Indian Creek is a potential site for a south-end visitor center and gateway into south end sites and the WMA.
- c. Close the shoreline north of Hellgate due to lack of sanitation facilities, potential for erosion, safety and access concerns.
- d. Reroute the road at White Earth to address safety and right-of-way concerns.
- e. Designate and number all campsites, and supply grills and picnic tables at each site.
- f. Chip seal all access roads.
- g. Place entrance booths at West Shore Road, and possibly Silos and Riverside to collect fees and user data.
- h. Establish a non-motorized trail system on the west shore between White Earth and Crittendon, and on the east shore between Hellgate and Confederate.
- i. Build more disabled facilities.
- j. Investigate building a road connecting Chinaman's and Court Sheriff/Ponderosa. Use one entrance gate in the summer at Ponderosa to control night traffic, ease collection of fees and visitor data, eliminate the use of an unsafe intersection with Canyon Ferry Road, and allow expansion of the campsites by about 20 spaces.

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- k. Showers: Ponderosa, Hellgate, Riverside
Toilets: Court Sheriff, Chinaman's, Ponderosa
Dump stations: Riverside, Hellgate
Boat ramps: Shannon/Chinaman's area, and White Earth, Silos in conjunction with expanded harbors
Water: Confederate, Overlook, Fish Hawk, Goose Bay, Cottonwood
Electrical service for caretaker pads and entrance stations: Riverside, Ponderosa, Silos entrance
Harbors: White Earth, Silos (dredged and deepened)
Breakwater: Yacht Basin, Silos
- l. Sell firewood at the campsites. At present, campers are destroying anything burnable, including trees and buildings in the campsites, in order to fuel campfires.
- m. Court Sheriff needs a boat ramp, and site protection.
- n. Cemetery Island needs interpretive signs, a boat dock, and repair of the tombstones.

In addition, DFWP, Reclamation, and BLM identified additional general improvements in the event these agencies formed a management partnership. These improvements are not site-specific nor all-inclusive.A

8. Participants at public hearings expressed the desire for more and better camping facilities. Some wished to have highly-developed camping, complete with showers, flush toilets and paved roads. Others wanted more primitive facilities where they could park a self-contained travel trailer. It's been suggested that fish-cleaning stations and coin-operated battery rechargers for boats and recreational vehicles be provided.P

Fees

9. At the public scoping meetings there was much criticism of the fee system. Although some were opposed to any fees, many more voiced dissatisfaction with "double charges" for both entrance and camping, or use of concession facilities. The public also complained about being bothered by fee collectors when recreating and asked that an annual camping pass be initiated.P

During the summer of 1989, the Parks Division conducted personal surveys of visitors to 23 units of the state park system to assess attitudes towards entrance and use fees (McCool 1989). Of total respondents, 69 percent were Montanans who, in general, said that they preferred a mixture of taxes and fees to support the state park system with proportionately greater reliance on user fees.P

Transportation

1. Many roads within the system are hazardous. Both East and West Shore roads are long, narrow dead-end roads. In the event of a fire, cabin site residents and recreationists might be without escape routes.A

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2. There are five potential sources of traffic that may generate a need for traffic improvements or alternative transit:
 - increased use of the Limnological Institute. If the Institute's use continues to grow, parking may have to be expanded. This is not anticipated in the near future (Gil Alexander, CFLI, personal communication, 11/9/90);
 - bald eagle viewing at Riverside will impact much of the same stretch of road and could cause seasonal and temporary traffic congestion. However, the peak season for the Institute is summer and the bald eagles arrive in the fall. Also, if the kokanee population declines, the bald eagle concentration may decline or bypass the area.
 - increased use of bicycles within the area. The area's narrow roads create a hazard for both motorist and cyclist.
 - as private lands on the east and west shores develop, some recreation area access roads will be impacted by increased use (see Land Use).
 - over time, general recreational use of the area will increase.A
3. Some of the cabin site lessees contend that a greater percentage of the cabin site lease fees ought to be applied to maintenance of roads accessing cabin sites.P
4. A determination needs to be made as to whether any of the shoreline is suitable for designated off-road vehicle use.P

Cultural Resources

1. Many historic cultural resources at Canyon Ferry Reservoir have not yet been recorded and evaluated. This was partly an oversight of the previous inventories and partly because many of these resources (farmsteads, canals) were thought to be too recent to be considered significant. Many of them are now old enough to be considered for their importance in local history.A
2. Most of the archeological cultural resources that have been recorded and surface-mapped have yet to be formally evaluated. It is not possible to effectively manage these resources until they have been evaluated. Many of these sites can contribute valuable information toward our understanding of the prehistory of the area.A
3. Management of the ten highly significant prehistoric sites at the southern end of the reservoir needs to be addressed as part of the management document. These sites need to be evaluated for their integrity and considered in the overall administration of the reservoir, and wildlife management.A
4. Artifact collecting (a violation of the Archeological Resources Protection Act) is an on-going problem at Canyon Ferry. There is a need for increased surveillance of archeological sites and enforcement of the law.A
5. Currently, there is no system to insure that federal cultural mandates are being complied with. There are indications that projects are being implemented without compliance with the National Historic Preservation Act. In order for the federal

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government to obey appropriate laws, a program for compliance coordination must be developed and implemented.A

Noise

1. Noise conflicts occur primarily on the north shore where cabin site residents and recreationist activities aren't always compatible.P

Visual Resources

1. Natural visual qualities have been diminished by human activities in the study area including but not limited to:
 - erosion of hillsides mainly caused by off-road vehicle use (most evident around heavily used campgrounds, and along the east shoreline at low-water);
 - from present and future development adjacent to recreation areas;
 - structural additions to the cabin sites such as unstandardized retaining walls, especially when looking from the lake.A
2. The potential exists for logging and mining in surrounding mountains within the viewshed of the lake. The USFS has recognized that timber harvest activities on Forest lands surrounding the lake could impact the viewshed (Art Howell, Helena National Forest, personal communication, 10/15/90). Of the two timber sales planned along the west slope of the Big Belt Mountains (Bugs and Lower Duck sales), within view of Canyon Ferry, visual mitigations will include thinning, and reduced size of clearcuts (Bruce Short, pers. comm., 2/25/91).A
3. Certain recreation sites need visual screening from adjacent land uses (e.g., the visual intrusion of the maintenance shop above Jo Bonner).A
4. The lack of shade trees and protective topography on the south end of the lake and portions of the east shore limit their attractiveness for future recreational development.A

3.3 CONSTRAINTS AND OPPORTUNITIES FOR MANAGEMENT

3.3.1 Management

This plan offers the opportunity to address management and administrative needs identified above. Not only are the agencies in close communication at this time, but the public has direct involvement in the agencies' solutions. The next chapter will suggest these solutions.

In addressing management changes, agencies are constrained by their respective legislative authorities, by limited budgets and personnel, and by current policies. As for water level management, Reclamation is also constrained by its previous agreements with irrigators, power providers, and regulatory agencies (see Water Resources and Quality).

If clearer, stronger management assignments were made between DFWP divisions, other funding might become available for capital improvements and operation (e.g., license fees for habitat improvement).

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3.3.2 Geology

There is an opportunity to provide an explanation of the geology of the area within a historical and natural systems interpretive program for Canyon Ferry.

Although geologic conditions pose few constraints for management, fractured rock formations have limited placement of septic tanks on the west shore.

3.3.3 Soils and Topography

Most of the soils around the reservoir are moderately- to highly-erodible. Wave and wind action, and runoff from storms have eroded the entire shoreline except on the gentlest of slopes. Where these soils combine with moderately- to steeply-sloping topography, the potential for erosion is intensified. Steep topography on the northwest shore limits parking expansion, and has dramatically increased road-building costs on West Shore Road (see Figure 15).

Soil conditions and topography have been a constraint to placement of septic tanks on both sides of the reservoir due to a variety of factors including: poor percolation rates, steep slopes, excessively permeable soils, and shallow depth to bedrock.

3.3.4 Water Resources and Quality

Maintenance of optimum water levels is sometimes a constraint to both recreation and wildlife management. Reclamation's obligations to provide water for hydroelectric generation and other purposes sometimes conflicts with resource management goals. Efforts have been made to recognize and provide for the best interest of competing uses through the forum of the Missouri River Advisory Council.

The Council has produced reservoir operating guidelines intended to identify reservoir water levels and flow release patterns that optimize recreational values and minimize impacts on fish and wildlife. Recommendations from the guidelines are incorporated in Chapter IV.

Adequate water levels in the pond system are imperative in the spring to ensure that islands are attractive to nesting birds and that they provide security from nest predators. Later in the year, riparian vegetation is susceptible to reduced productivity from increased drawdowns, and loafing sites for resident birds may be submerged at inappropriate periods. In winter, drawdown of the reservoir affects the pond system that is dependent upon the gradient between the ponds and the lake. Freeze-up of the reservoir at an unusually high elevation could magnify the potential for ice-jams on the river just above the lake. If chunks of ice are retained on the interior portion of the river islands, goose nesting is negatively impacted.

Reservoir levels for recreation are based on their effects on physical facilities and structures, such as boat ramps, and on the needs of certain activities, such as swimming and picnicking. Generally, recreation sites can accommodate a wider range of fluctuations than other resource values.

The use of the reservoir's water for domestic purposes is discouraged by Lewis and Clark County Health Department because of high arsenic content. Ground water will remain the only source

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of drinking water for most recreation sites and cabin sites. However, the ready source of water for irrigation of landscaping at recreation sites is a real benefit to the area as long as irrigation systems can be provided.

3.3.5 Vegetation

Wetlands identified under federal guidelines are critical habitat at Canyon Ferry. Wetlands are protected by federal regulation, requiring that development be avoided on these areas if possible (see Figure 15). At a minimum, limitations on development and mitigation of impacts are required.

One plant species of special concern (rabbit crazyweed) could restrict further development in the Overlook area (see Figure 15). Critical wildlife habitat is discussed below.

3.3.6 Wildlife

The emphasis of this plan involves the balancing of fisheries and wildlife needs with those of recreation and other human use. Both animal and human use are, in turn, dependent on a protection of the resource base discussed under the other natural resource topic headings.

Wildlife enhancement opportunities are included in great detail in wildlife management plans for the reservoir (DFWP 1992). They generally include vehicle and boat access control, protection and enhancement of riparian and other habitat, hunting management, and water level management.

Critical wildlife habitats are shown on Figure 15 and include:¹

- bald eagle feeding areas along the shoreline below the dam,
- bald eagle use areas in the Spokane Hills and along the south shore,
- mule deer winter range in the Spokane Hills,
- antelope range on the Townsend Flat,
- and waterfowl brooding and staging areas at the WMA, Beaver Creek, Avalanche Bay, Duck Creek, and south of Goose Bay.

The recent Hauser Lake bald eagle concentration has resulted in opportunities for diversifying the attractions of Canyon Ferry. Bald eagles need protection from human disturbance during nesting and feeding concentrations. Maintaining buffer zones, public education, and providing and managing viewing areas will be necessary as long as the eagles choose to use the area (see Figure 15).

Increased rural development has caused conflicts, especially between antelope hunters and rural residents. With antelope herds on both sides of the reservoir, and the potential for increased development on adjacent private lands, these conflicts are expected to grow worse. Increased development on public lands has the potential of displacing wildlife from those areas to private lands. This increases the concerns of private landowners, removes public lands from the habitat

¹ It is important to consider that bald eagle use could increase, decrease, or change location altogether. Their concentrated use is dependent on a food source; if this changes, so will their use.

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base, reduces human safety during hunting season, and makes it more difficult to manage antelope populations.

Isolation from human disturbance is critical to the attractiveness of areas for waterfowl during the brood-rearing stage and spring and fall migrations. Some potential may exist to work with adjacent landowners to make their fields more productive for migrating waterfowl. Habitat for upland game birds could also be enhanced with the cooperation of area lessees and landowners.

A wildlife interpretive program, taking into account habitat protection and wildlife needs, could be developed around the reservoir, and at the WMA in particular. This could include signing, disabled-accessible sites, naturalist tours, and walking and biking tours. It could serve to diversify the attractions of the area, especially at the south end of the lake. The visual/tourist attraction of the antelope on the west side of the reservoir could be expanded and managed to provide for some older bucks in the population. This would require cooperative arrangements with local landowners.

3.3.7 Fisheries

This plan also emphasizes the balancing of fisheries needs with those of recreation and other human use. Fisheries conflicts related to human use are most likely to occur along tributary corridors and along the lake shoreline, where additional development has potential to impact fish populations and their habitat.

Tributaries to Canyon Ferry Reservoir provide the greatest opportunity for fisheries enhancement in the area. Most tributaries to the system have been severely impacted by human use; land and water use practices such as mining, livestock grazing, irrigation withdrawal, and development. Restoration of these tributaries has potential to significantly increase the available spawning habitat for brown and rainbow trout.

Tributary protection and enhancement efforts are consistent with goals and objectives of the Fisheries Management Plan for the Missouri River and Canyon Ferry Reservoir (DFWP 1992). In addition to the anticipated benefits of increased natural reproduction and fishing opportunity, excellent fish viewing and interpretive opportunities may arise from tributary restoration projects. Opportunities to disseminate and interpret fisheries information will also occur at visitor centers.

Existing or potential spawning tributaries must be isolated from human disturbance with potential to impact fish populations, riparian areas and water quality. In addition, increased human activities near tributaries can potentially result in increased harvest (both legal and illegal) of resident and spawning populations.

3.3.8 Climate

Climatic conditions posing constraints to reservoir and land management at Canyon Ferry include persistent wind and sudden, high wind storm events, especially at the south end of the lake; cold, often icy conditions in winter that restrict most of the common recreational activities, and can hinder access; and ice jams, particularly at the southwest end of the lake that pose problems for the safe location of docks and other floating facilities.

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3.3.9 Air Quality

The continued application of magnesium chloride to unpaved road surfaces will be necessary until or unless some better substance is found or roads are paved.

3.3.10 Socioeconomics

The opportunity exists to increase visitation by promoting the area, having the secondary effect of stimulating local and statewide economies.

3.3.11 Land Use

Federally-designated 100-year floodplains exist at the Missouri River Delta and along Duck Creek. If development was contemplated at these locations, floodplain permits and potential development restrictions would apply. Wetlands, critical wildlife habitat, and other critical constraints may pose limitations on recreational development (see Figure 15).

Agricultural leases in the WMA provide an opportunity to enhance wildlife habitat by working with landowners on cropping practices.

The cemeteries south of Duck Creek and on Cemetery Island merit protection and exclusion from development.

3.3.12 Recreation

In spite of all the activities accommodated at Canyon Ferry, much of the area's recreation potential remains untapped. Hiking and equestrian trails; bicycle trails, both on and off-road; historic and wildlife interpretive sites and trails; hunting dog trials, and disabled activities are but a few of the possible additions to the recreational spectrum of the area. There may also be potential for commercial use of the reservoir for boat and fishing tours, windsurfing tours, and a state SCUBA training site.

Canyon Ferry has experienced greater visitation in the past. Leisure time and recreational pursuits are growing, especially water-based recreation, and population growth alone will contribute to recreation pressure at Canyon Ferry. If management objectives include promotion of the area, and enhancement of recreational opportunities both in level and variety, then the area will receive increased visitation that is less dependent on the fishery.

Fishing quality is a constraint to visitation. There is a correlation between fishing quality and visitation on the reservoir. As fishing quality has declined in recent years, visitation has dropped; 28 percent between 1987 and 1990. Visitation is also influenced by weather, forest fires, water levels, promotional efforts, and energy costs, to name a few.

Redistribution of visitors around the lake can be influenced to a certain degree by making other sites more attractive. This would be accomplished by providing more or better services (e.g. paved access, shelters, electricity, landscaping, sandy beaches). However, weather and other natural features need to be considered as they may negatively outweigh any attractive improvements.

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Ultimately, campgrounds may need to be closed when capacities are reached to avoid social and environmental impacts (this is now being practiced at Court Sheriff/Ponderosa).

Management could be split between the north and south ends of the lake; Canyon Ferry Village and Townsend would serve as the respective headquarters. This would allow for easier management of south-end sites and better enforcement capability due to closer proximity of personnel. Ultimately, Indian Creek could be the site of a combined south-end visitor center and office headquarters.

Jo Bonner and Hellgate are now used as group-use sites; Jo Bonner on an informal basis and Hellgate through a reservation system at Region 8 headquarters. These sites could be improved and promoted for group use.

Consideration could be given to establishing traffic lanes for water-skiers, or elimination of some activities in busier bays. Restriction of some water-based activities could also be considered.

The transplant and establishment of wild turkeys on the WMA, as proposed in the Wildlife Management Plan, would expand hunting and watchable wildlife opportunities.

3.3.13 Transportation

Canyon Ferry Road, maintained by Lewis and Clark County, is a major access route to Canyon Ferry State Park. Lewis and Clark County now resurfaces about eight to ten miles of paved roads a year when it should be maintaining about 30 annually in order to get to all paved county roads on a five-year maintenance schedule. It needs about three times the personnel but with current tax revenues and possible increases in fuel costs, this situation is not expected to improve (Bob Hanson, Lewis and Clark County Surveyor, personal communication, 11/8/90). Therefore, county road maintenance and construction on Canyon Ferry Road are not expected to increase in the near future.

Unauthorized use of vehicles on Reclamation lands could be discouraged by the development of a travel plan. A travel plan would explain the status of roads and lands in the area much the same way that the Forest Service travel plans now do.

3.3.14 Cultural Resources

If there is a drawdown of the reservoir for any reason (e.g. dam or powerplant maintenance) a plan for archeological investigations of some of the sites recorded in the 1940s should be implemented.

The paleontological remains at Canyon Ferry Reservoir may prove to be scientifically important. Recent excavations by the Museum of the Rockies indicate that there is a wealth of remains, some of which are unique. The area is rich in Native American and early Montana history. By setting up a historical interpretive tour at Canyon Ferry, the area's attractions could be diversified.

Such a program could be expanded from the information display at the visitors center to commemorative plaques on historic buildings and/or tours explaining the history of the area. Establishing a self-guided interpretive tour around the park would be another option.

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Cemetery Island has been the focus of volunteer activities including restoration of grave sites, repair of vandalism and vegetation removal. This group could be revived on a periodic basis with cooperation of the managing agency.

3.3.15 Noise

The narrow, confined bays at the north end of the reservoir, such as Magpie and Cave bays, tend to amplify sounds; use of jet skis has been of particular concern. Cabin sites located along or near these bays are subject to recreationists' noise, and recreationists are subject to cabin lessees' noise. In the past, a working group established to address noise conflicts met with little success.

Enclosed topography at Cave and Magpie bays may pose a constraint to unlimited use of loud recreational equipment. (See Figure 15).

3.3.16 Visuals

In observing recreation use at the park, sites are that have privacy from adjacent sites, that are most visually attractive, or are separated in some way from other individual sites are the most popular. This is most often due to the existence of some type of vegetation. Much of the east and west shorelines have little natural cover. Screening individual campsites from one another with vegetation or other natural materials could make these less-popular sites more attractive. In particular, Silos and Hellgate would benefit from more vegetation and privacy between campsites.

3.4 PHYSICAL CARRYING CAPACITY

A capacity analysis needs to be performed based on natural resource protection, physical space, social needs, and managerial considerations (see 2.11.4 Capacities for a further discussion of capacity analysis). On peak weekends in the early 1980s, as many as 20,000 visitors have been estimated at Canyon Ferry, straining the ability of agencies to properly manage for health and safety, service provision, and emergency access (Bob McKenna, private engineer, personal communication, 12/10/91).

Even though visitation has dropped off since then, staff has noted that spillover often occurs onto undeveloped sites at peak periods. In the summer of 1990 and 1991, the following sites exceeded physical capacity during certain periods:

- Hellgate, Chinaman's, and Court Sheriff/Ponderosa during 4th of July weekend
- Riverside, all of July during the salmon run and intermittently from then until September
- Jo Bonner, peak holiday weekends

By examining past use trends, it is possible to predict what areas might be more heavily used if fishing improved. In the 1970s and 1980s when fishing quality was high, Goose Bay, Confederate, Hellgate, Silos, Chinaman's, and Court Sheriff/Ponderosa were often at capacity on Memorial Day, 4th of July, Labor Day, and between holidays during good weather. On one

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4th of July weekend, staff counted 400 vehicles at Hellgate, an area with physical capacity for 285 vehicles (Bill Hohn, DFWP, personal communication, 1/20/92).

3.5 OPPORTUNITIES FOR NEW OR EXPANDED RECREATION SITES

Opportunities for new or enhanced recreation experiences are described below. All potential developments that have been suggested to date are listed without regard to land use conflicts or natural resource considerations so that the full range of development options can be explored. These areas will be reviewed against development criteria that follow. Alternatives for development will emerge from this comparison.

3.5.1 Potential Development Options

Sites being considered for recreational expansion and/or development, or wildlife management areas include:

- 1) Wildlife interpretive development of the WMA, including possible signing, access improvements, disabled access and trails, disabled-hunting blinds, and directional signing.
- 2) Signing or development of ice-fishing access points.
- 3) Improved access and bridge construction at Duck Creek.
- 4) A boat-access site at a bay directly across the lake from Duck Creek.
- 5) A boat-access site at Marks' Bay.
- 6) Expansion of camping, and day-use facilities at White Earth/Beaver Creek. The bay at White Earth would be dredged. The small size of the bay restricts use here.
- 7) Development at Scooter Bay, including camping, and day-use.
- 8) Designating a walk-in hunting area around Avalanche Bay for antelope and waterfowl.
- 9) Developing a non-motorized trail between Crittendon and White Earth and between Hellgate and Confederate. Associated parking would have to be developed at either end.
- 10) Developing bald eagle viewing and other facilities at Riverside. (The bald eagle concentration may be temporary. Therefore, the level and type of investment in eagle viewing facilities will have to be closely considered.)
- 11) Jo Bonner and Hellgate are now used as group-use sites. Facilities could be provided for such use here.
- 12) Designating the area between Duck and Confederate creeks as an ORV area.
- 13) Potential commercial expansion of a marina at Silos.
- 14) Seasonal recreation site development below the dam opposite Riverside, compatible with eagle management.
- 15) Designating three new wildlife management areas;
 - 1) extending north from the existing WMA,
 - 2) between Crittendon and White Earth, and
 - 3) between Avalanche and Scooter bays.

3.5.2 Development Criteria

Certain criteria will be used in determining the suitability of potential sites, including:

- Accessibility. Does the site have existing access, or an existing public right-of-way and easily-developed access? Does the site also have the capability of being fenced from unauthorized vehicle use? For boat-access sites, bays need to be adequately sheltered.
- Suitable natural features. Is the site, or type of use proposed for the site, relatively free of conflict with environmental constraints, including critical wildlife habitat? Gentle topography, beach area, and sheltering vegetation are preferable. For development of new shoreline areas, climatic conditions such as wind and ice jams will be considered.
- Current or potential demand. If the area is currently receiving use or was identified during the public scoping process as desirable for development, it will be considered.
- Attractiveness. Existence of views, relative quiet, and vegetation will be considered.
- Adjacent land use. Proposed uses need to be compatible with adjacent uses, such as concessions and residential development.
- Proximity of the site to other recreation sites is desirable (for ease of management).
- High level of use. If the area receives a high level of use and/or has been observed to exceed physical capacity, additional development will be considered.

3.5.3 Constraints Mapping

There are various naturally-occurring phenomena and conditions that may limit or influence human activity within the study area. Although more than one management alternative will be developed for this plan, each must take into account potential associated environmental impacts. For these reasons, and for the benefit of making daily management decisions, natural constraints are mapped on Figure 15 and discussed below.

100-Year floodplains. These are estimated 100-year floodplains based on Federal Emergency Management Administration data. Building in floodplains is generally avoided but must adhere to floodplain rules administered by the county. Septic tank drainfields are prohibited in floodplains, and structures must be elevated above the floodplain. Many recreational improvements, such as roads, picnic tables, and landscaping are compatible with floodplain management.

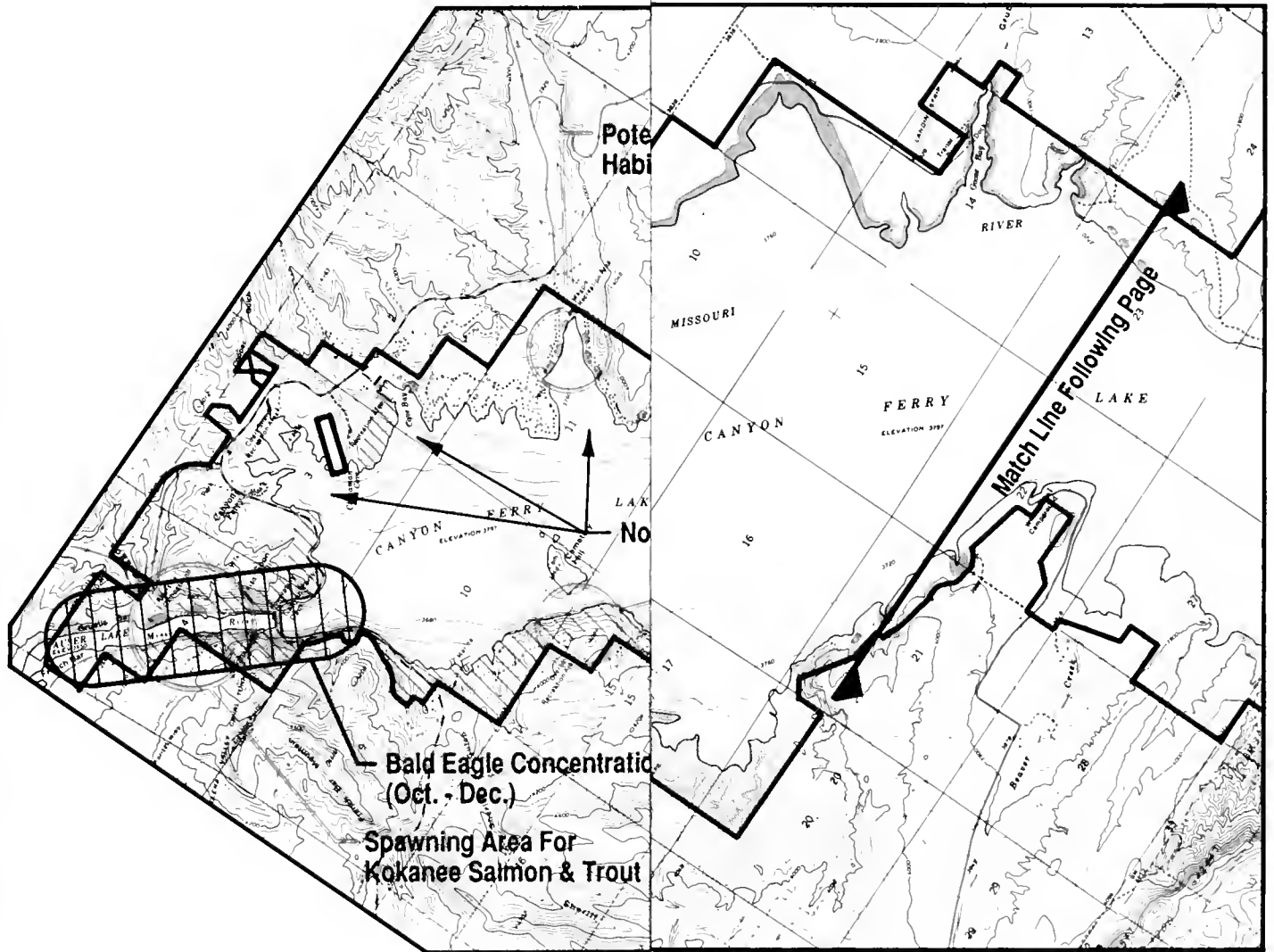
Prime soils if irrigated. The majority of soils types in this designation are prime if irrigated. Soils information is taken from Soil Conservation Service (SCS) soils surveys for Broadwater and Lewis and Clark counties. Prime if irrigated soils need to have SCS review, and any impacts mitigated, if they are to be converted to a developed use.

Wetlands. A vegetation survey prepared by OEA Research, 1991, showed that many shoreline areas around the reservoir meet federal jurisdictional wetland criteria. Wetlands are not necessarily wet at all times but exhibit a combination of soils and vegetation that

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NORTH

For Remainder Of Study
Area, See Reverse Side

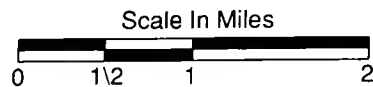


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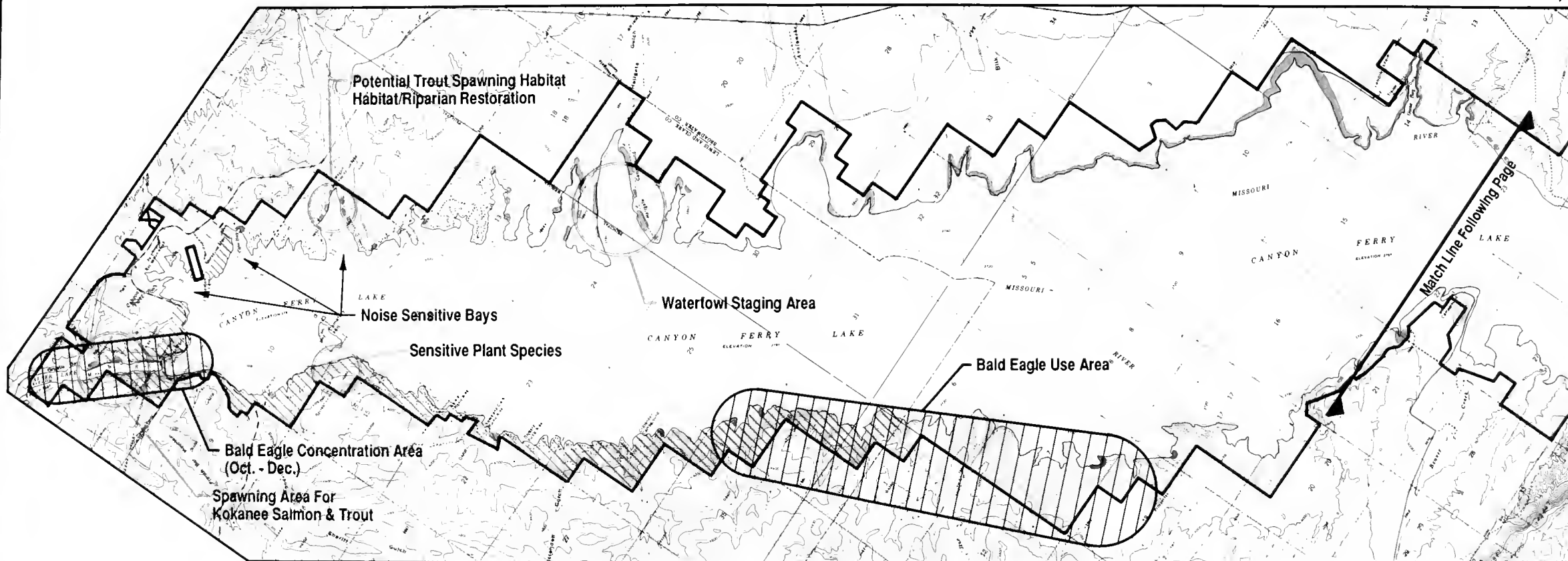
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CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 15
Environmental
Constraints Map



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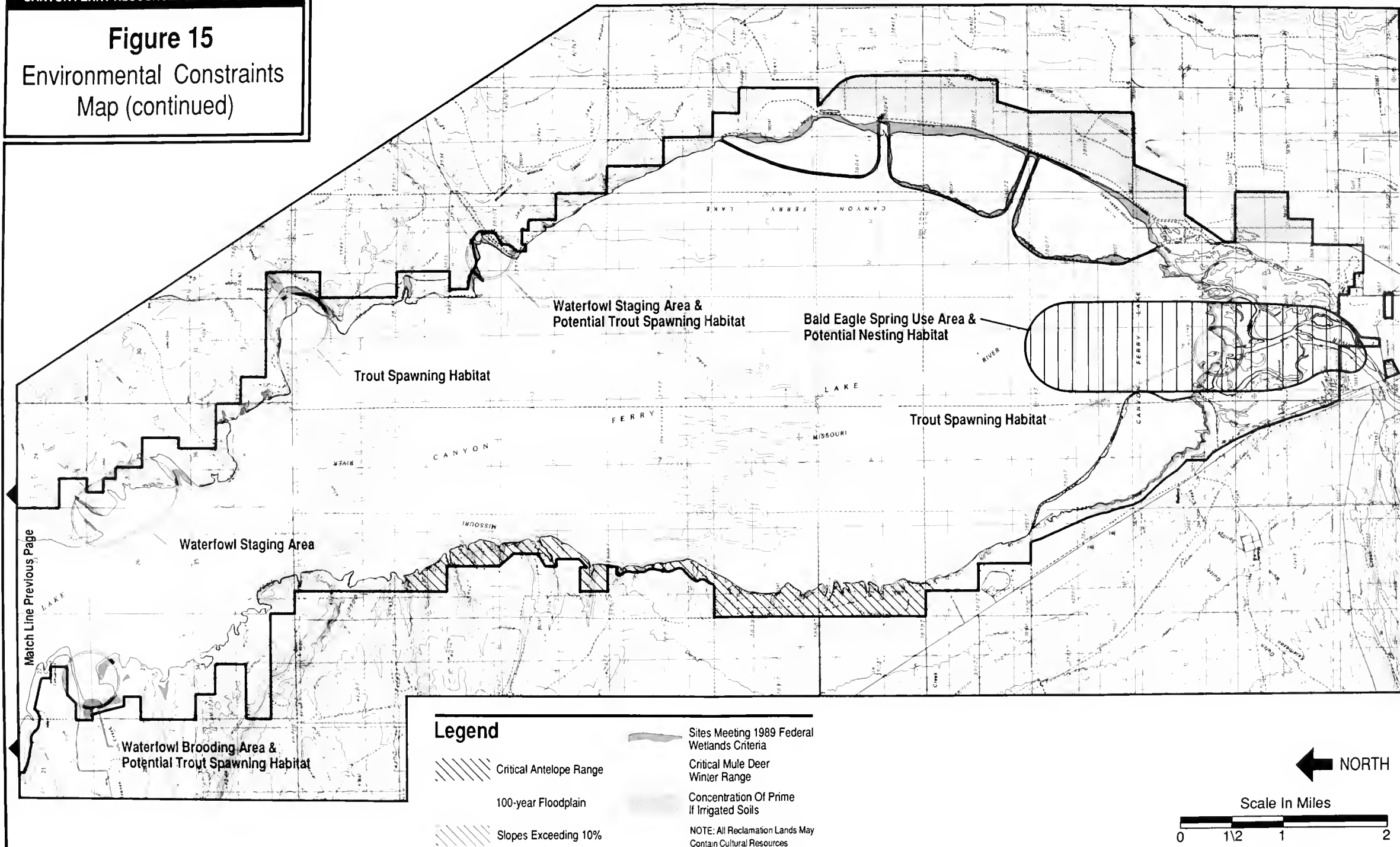
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|--|---------------------------------|--|--|
| | Critical Antelope Range | | Concentration Of Prime If Irrigated Soils |
| | 100-year Floodplain | | Sites Meeting 1989 Federal Wetlands Criteria |
| | Slopes Exceeding 10% | | |
| | Critical Mule Deer Winter Range | | |

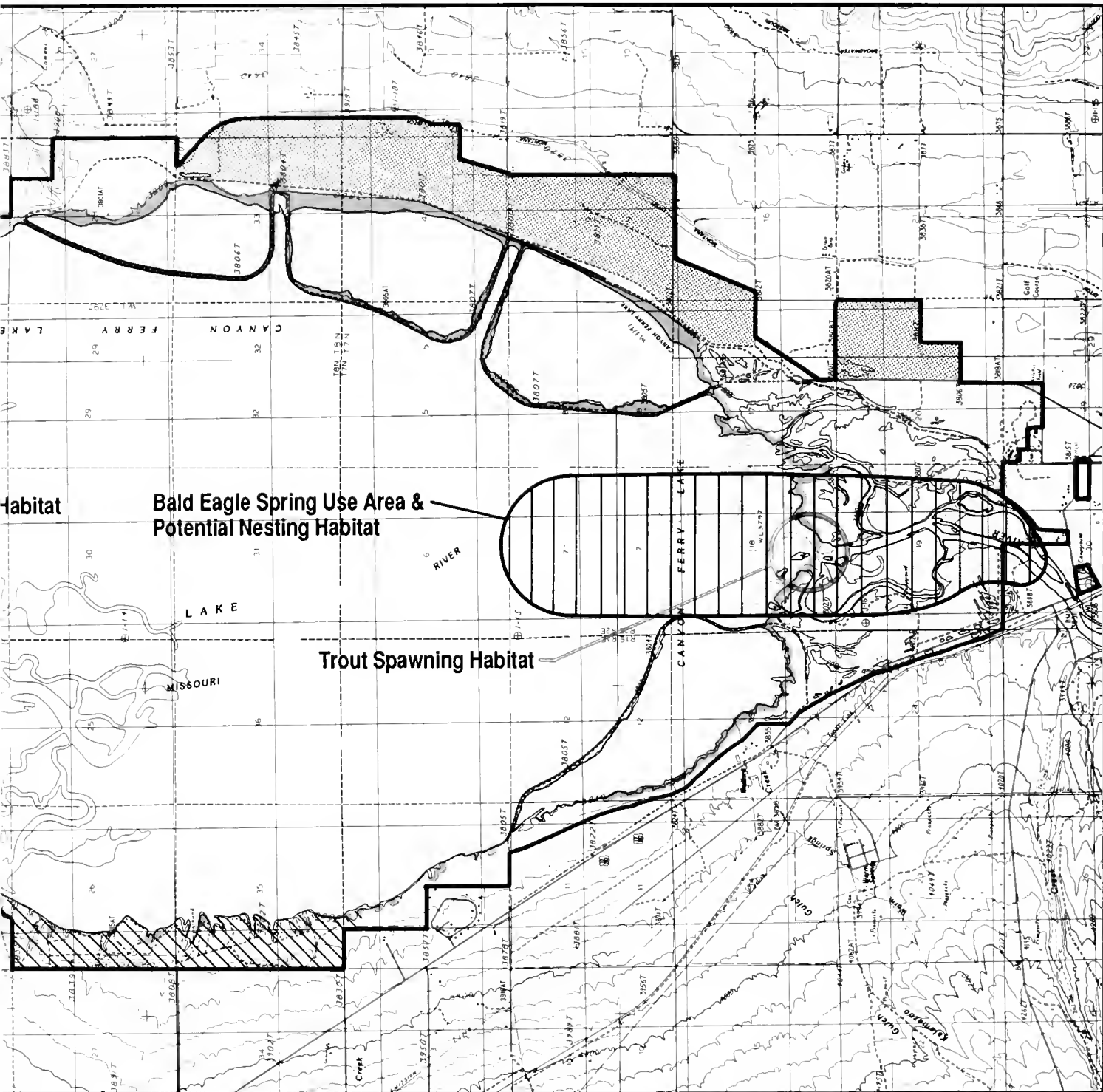
NOTE: All Reclamation Lands May Contain Cultural Resources

CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 15
Environmental
Constraints Map

Figure 15
Environmental Constraints
Map (continued)





Meeting 1989 Federal
 Lands Criteria
 cal Mule Deer
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Scale In Miles



are influenced by water. Wetlands can be extremely productive habitat and their uniqueness has prompted federal regulations restricting their conversion to other uses. These would need to be adhered to if wetlands were developed. Cattle should be restricted from damaging these areas.

Bald eagle concentration areas. The bald eagle concentration area below Canyon Ferry Dam is a result of kokanee salmon spawning concentrations. Eagles congregate here from October through December. The Endangered Species Act protects threatened and endangered species. Cooperating agencies carefully monitor bald eagles pursuant to this law. The Hauser Dam Bald Eagle Management Strategy defines use restrictions for the concentration area; human activity here has been managed by a USFS-DFWP-BLM-Reclamation-USFWS-MPC-Lewis and Clark County management team.

Bald eagle nesting area. An active nest site in this vicinity could restrict human activity from February 15 to August 15, annually. Cooperating agencies maintain some management flexibility to change dates and strategies as more is learned about each specific situation. Recreation improvements will need to be compatible with the eagles' territorial needs to minimize disturbance to the young.

Bald eagle spring use area. From March 1 through April 15, the spring migration of bald eagles congregates to feed and rest in this area. Generally, recreation uses here such as ice-fishing and ice-boating would not conflict since the ice needs to thaw before the eagles would use the area.

Bald eagle potential nesting habitat. Area wildlife managers agree that the Missouri River delta appears to be the most suitable habitat remaining on the reservoir for attracting nesting pairs of bald eagles. If bald eagles did expand into this area, use restrictions could be implemented between February 15 and August 15.

Noise sensitive areas. Use of loud recreational or other mechanized equipment in combination with the narrow topography at Magpie, Cave, and Canyon Ferry Village bays results in noise conflicts between recreationists, and between cabin site users and recreationists.

Critical mule deer winter range. Mule deer depend on this area from about mid-November to mid-march. Critical winter range provides preferred forage and is often open when other areas are snow-covered. Area managers propose that recreational development be restricted to those uses that are compatible with winter range, and that minimize disturbance to deer.

Waterfowl staging areas. Staging is the phenomenon whereby waterfowl gather before spring and fall migrations. On Canyon Ferry, major staging bays are at Avalanche and Duck creeks. In the spring, birds are present from when the ice leaves the lake until about mid-April. In the fall, staging takes place from early-September until freeze-up. Wildlife managers are concerned that these areas may need seasonal use restrictions for on- and off-shore uses, and that the shoreline remain roadless when possible.

CHAPTER 3 NEEDS, PLANNING CONSTRAINTS, AND OPPORTUNITIES

Waterfowl brooding areas. Brooding (raising of young) takes place at Beaver Creek and on the WMA. The critical waterfowl brooding period is from the first of May until mid-July, when the young birds gain flight.

Spawning and potential spawning habitat. DFWP has made considerable investment in spawning habitat restoration in Confederate Bay and Creek. The tailrace of the dam and both sides of the shoreline below the dam in the study area are spawning areas for kokanee salmon and rainbow and brown trout. Potential trout spawning habitat exists at Beaver, Duck, and Magpie creeks. Concerns here are that damage to riparian vegetation be minimized; that water quality be protected, especially from human waste attributable to a lack of toilets or RV waste dumping; and that enforcement necessary to stop illegal killing of spawning trout be provided. Any dredging near delta areas should be avoided.

Critical antelope range. Antelope are dependent on this area year-round. As habitat has diminished due to both residential and recreational development, undeveloped areas have become more critical to antelope survival. The prime considerations of area managers are that Silos recreation area be defined and designated, and motorized vehicle use restricted to maintain as much open space as possible within the range.

CHAPTER 4 PROPOSED PLAN

4.1 INTRODUCTION

Chapter 4 presents the proposed resource management plan for Canyon Ferry State Park. Goals, objectives, programs, and policies were developed and refined by the Canyon Ferry Master Advisory Committee, the Department of Fish, Wildlife and Parks, and the Bureau of Reclamation.

In order to meet environmental laws and to formulate the best management prescriptions for Canyon Ferry, a set of preliminary management alternatives was developed for review by the public. Goals and objectives were used as a set of criteria against which management alternatives and programs and policies could be evaluated.

Preliminary alternatives considered included:

Alternative A - A management plan based on balancing recreation development and expansion with important wildlife values, conservation, and environmental protection.

Alternative B - A management plan that would favor wildlife and conservation/environmental protection over recreation development. There would be no recreation site expansion. The entire east side of the reservoir would be considered as a wildlife management area.

Alternative C - A management plan that would favor recreation expansion over wildlife and conservation/environmental protection. This alternative would advocate for ORV use, recreation site expansion of Duck Creek, and intense recreation development of Confederate, Goose Bay, and lands north of Hellgate. No new WMAs would be proposed.

Alternative D - This would be the no action alternative, a continuation of the status quo. No plan would be implemented and management would proceed at the direction of the ultimate management agency (ies).

Plan alternatives were reviewed at a series of four public meetings held in Helena, Butte, Bozeman, and Townsend. Upon comparing the alternatives with the goals and objectives below, reviewing them for compatibility with environmental protection and socioeconomic benefits, reviewing the alternatives at the public forums, and reaching agreement between agencies and the DFWP Master Advisory Committee, Alternative A emerged as the preferred alternative (see Figure 16).

Alternatives B and C and other alternatives suggested but dismissed from further study are discussed in the Environmental Assessment for the Canyon Ferry Resource Management Plan at the end of this document.

Note: Multi-use trails are conceptual. Exact locations and distances are yet to be determined.

Sign, "WMA Access"

Duck Blinds

Disabled Accessible Trail

Sign, "WMA Access"

Missouri River Nature Trail
Wildlife Interpretive Site

Indian Road: New
Visitors Center, Camping

Sign, "Fishing Access,
Ice-boating"

Heligate: Walk-in Area
For Antelope Hunters

Parking

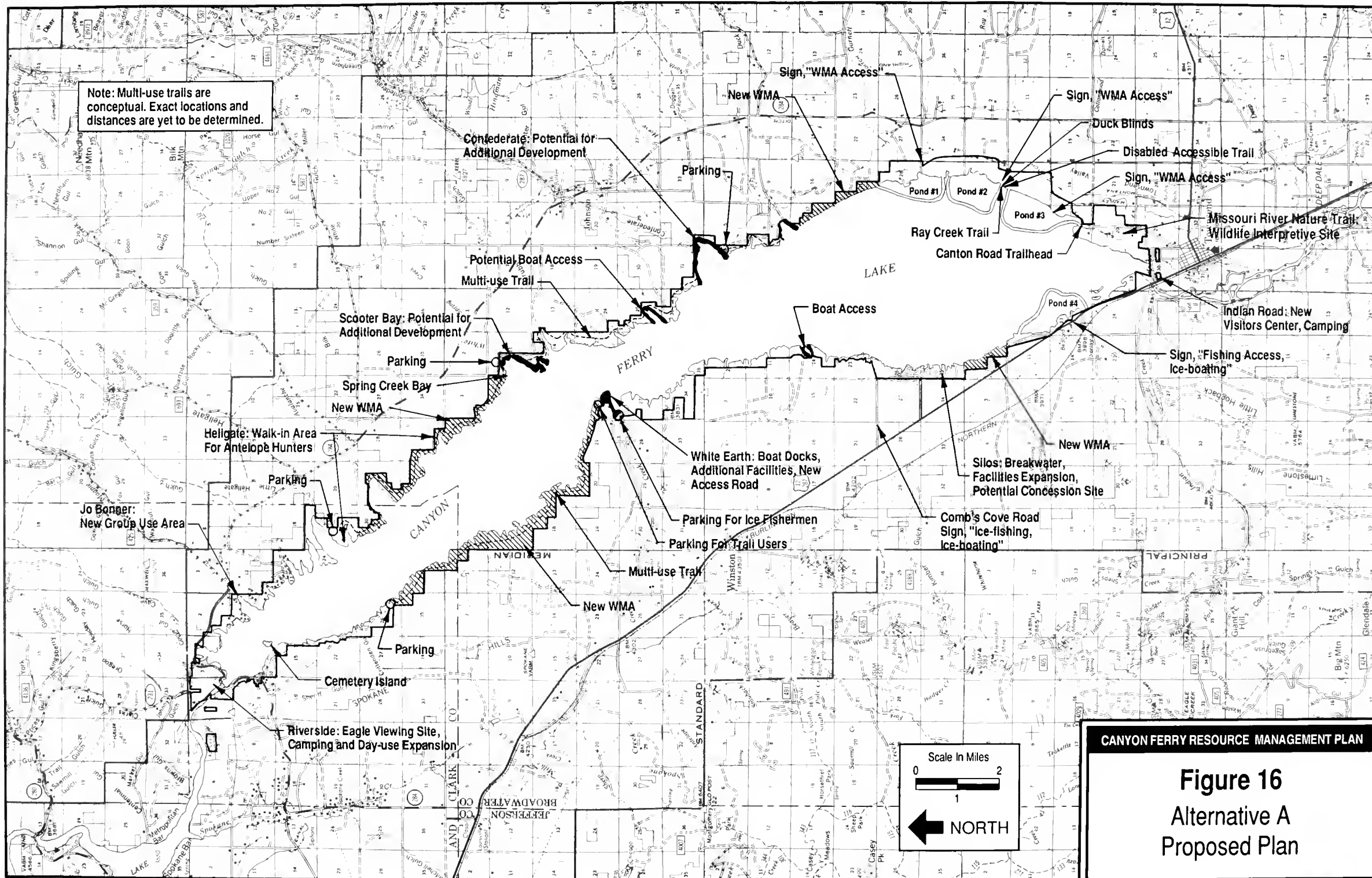
New WMA
er, slon,
sslon Site

Jo Bonner:
New Group Use Area

Riverside
Camping

CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 16
Alternative A
Proposed Plan



4.2 GOALS AND OBJECTIVES

One of the most important tasks in any planning effort is the formulation of goals and objectives. The identification of goals and objectives helps tie action strategies to identified issues.

| Definitions | Example Statements |
|--|---|
| An issue is a specific need or basic concern that exists within the study area. (These were identified in Chapter 3.) | Issue: Timber sales on Forest lands may impact viewsheds. |
| A goal is a long-range statement for attainment of a desired end. | Goal: Protect scenic and esthetic qualities. |
| An objective is a specific method or activity that can be used to achieve an identified goal. | Objective: Management agencies will work with the Forest Service to review all timber sales. |

The following goals and objectives will be used as the framework for evaluating management alternatives. They have been divided into four categories:

- Reservoir Operations and Management
- Land Use and Access
- Recreation
- Natural Resources

An implementation schedule has been provided at the end of this chapter as a guide for management agencies, and to measure the progress and success of this plan.

4.2.1 Reservoir Operation and Management

GOAL 1

Operate Canyon Ferry Reservoir to optimize recreation and natural resource values while maintaining Reclamation's contractual water commitments.

OBJECTIVES:

- Whenever possible, restrict spills through the spillway to the normal high flow period, limited to a maximum duration of 30 days and 4,000 cfs discharge.

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4.2.1 Reservoir Operation and Management

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OBJECTIVES:

- a. Whenever possible, restrict spills through the spillway to the normal high flow period, limited to a maximum duration of 30 days and 4,000 cfs discharge.

- b. Maintain minimum flows of 4,000 cfs below the dam to protect the Missouri River fishery. During critical low flow years when an adequate water supply is not available, flows may be reduced to 2,800 cfs.
- c. Whenever possible, maintain spring and fall water elevations between 3,785 and 3,792 for fisheries and waterfowl. Summer elevations will accommodate optional recreation and wildlife values if maintained between 3,785 and 3,796. Whenever possible during winter months, reservoir levels should be stable to moderately receding.
- d. Incorporate Federal Energy Regulatory Commission (FERC) relicensing requirements into the Missouri River Advisory Council's guidelines, and continue meetings of the Council.

GOAL 2

Develop and revise management agencies' policies, agreements and regulations to provide for public health and safety, resource protection, and avoidance of land use and water-based conflicts.

OBJECTIVES:

- a. Develop new MOUs between future management agencies.
- b. Prepare a consistent policy on concessions. This needs to address policy on vested interest, debt restrictions, renewals, facility ownership, entrance fees, promotion, hazardous waste disposal, lease rates, and commercial expansion.
- c. Review agency policies to assure that they provide adequate resource protection, and develop procedures to assure NEPA (and MEPA, if applicable) compliance for activities on federal lands.
- d. Develop an interagency sign-off procedure for land use decisions affecting multiple agencies.
- e. Assess adequacy of lease fees for cabin sites, including a reappraisal of the cabin sites by 1997. Then consider adopting federal cabin site fee guidelines.
- f. Designate a single contact agency to route all permitting.
- g. Clarify the purpose and function of the Operators Training Trust (OTT) and develop a priority list of OTT projects.
- h. Establish a noise working group to address noise conflicts at Magpie and Cave bays.

- i. Work with the state WQB and county health departments to resolve water quality and waste disposal issues associated with the cabin sites, campgrounds and other development. In particular, resolve the cabins sites' septic tank replacement problem.
- j. Prepare, publicize, and enforce standards and permits for construction of cabins, boat docks, stairways, and other appurtenant structures for the cabin sites.

GOAL 3

Develop a public information/services plan for the area that addresses the following objectives.

OBJECTIVES:

- a. Formalize a directional, informational, and commercial sign program between management agencies and area concessionaires to provide a consistent theme to area signing.
- b. Provide a travel plan for the area noting access points, points of interest, recreation facilities, and regulations and restrictions.
- c. Construct a south-end visitor information and management center, in partnership with the Townsend community.
- d. Develop, initiate, and publicize historic and wildlife interpretive programs, especially at the south end of the lake.
- e. Invest in the visitor center(s) so that it(they) can provide programs, brochures about the area, tours for visitors, and maps.
- f. Provide boating regulations, safety tips, waste disposal requirements, access areas, and courtesy tips.

GOAL 4

Provide adequate budget and staff to manage Canyon Ferry for a peak recreation experience while protecting public health and safety.

OBJECTIVES:

- a. Provide at least \$3 to \$5 million for capital improvements, and \$300,000 to \$500,000 in annual operations and maintenance budgets for operation of Canyon Ferry through state and federal allocations. Capital improvements would include recommendations within this plan along with a new maintenance shop, road improvements, visitor centers, and administration building, among others.

- b. Increase staff to a minimum of 14 FTEs, emphasizing increased enforcement staff.
- c. Establish a pilot program to promote Canyon Ferry to increase entrance revenues and benefits to local communities. Create and cost-share this program with local chambers-of-commerce, concessionaires, and the state Travel Promotion Bureau.
- d. Prepare a five-year capital improvement program (CIP) for Canyon Ferry and establish a procedure for updating the CIP within each year's budget process.

GOAL 5

Provide adequate public services and facilities for public health and safety, for enhancing recreation opportunities consistent with the goals of this plan, and to increase revenues.

OBJECTIVES:

- a. Conduct a communications evaluation to determine the most cost-effective method of managerial and emergency communication for the study area.
- b. Provide additional RV dump stations at Silos and in the Canyon Ferry Village/Visitor Center area, and a floating sanitary dump station for vessels at one of the concessions sites.
- c. Provide potable water at Fish Hawk, Overlook, Goose Bay, Confederate and Cottonwood.
- d. Formulate a mosquito control plan prior to any future pesticide application around the reservoir.
- e. Continue to monitor toxic algae blooms to protect public health and safety.

4.2.2 Land Use and Access

GOAL 6

Minimize land use conflicts within the study area, and between study area uses and surrounding lands.

OBJECTIVES:

- a. Formulate a Canyon Ferry Village use plan, to set user priorities and outline agency needs.

- b. Maintain commercial development at current levels within the study area, except for evaluating the feasibility of a marina at the south end of the lake. Assess the need for expansion of Canyon Ferry Airport.
- c. Inventory landscaping needs within developed and proposed recreation sites and develop a budget for plant acquisition, irrigation, and staffing. Consider establishing a nursery site at Canyon Ferry for landscaping stock and visitor interpretation.
- d. Provide buffer zones around future recreational development to minimize impacts to surrounding land uses.
- e. Work with local ORV user groups to identify an ORV use area on nearby public lands. Designate authorized ORV use areas on Reclamation lands only if the above is not possible and if ORV use can be demonstrated to have minimal environmental impacts.
- f. Curtail trespass/unauthorized vehicle use on Reclamation lands by a combination of methods, including:
 - fencing boat access areas, recreation sites, and riparian areas
 - barrier posts and ditches
 - signing
 - increased enforcement
 - working with BLM to control livestock trespass
- h. Develop a fire management plan.

GOAL 7

Provide safe access to a wide variety of user groups within the study area while minimizing natural resource damage.

OBJECTIVES:

- a. Provide additional disabled-access facilities at all developed sites. Provide disabled-accessible trails and hunting blinds in the WMA.
- b. Explore mechanisms to cover the cost of upgrading road maintenance for East and West Shore roads.
- c. Conduct a safety and engineering analysis of the Canyon Ferry road system. At least, widen West Shore Road and attempt to acquire right-of-way to loop East Shore Road. Provide an alternative access road into White Earth.
- d. Sign and mark both fishing and ice-fishing access points.

GOAL 8

Protect, investigate, and provide opportunities to enjoy cultural resources.

OBJECTIVES:

- a. Complete a systematic inventory of historic, prehistoric, and paleontological resources.
- b. Increase surveillance of sites and paleontological locales.
- c. Develop compliance procedures for cooperating agencies so that activities are not overlooked and resources destroyed.
- d. Comply with existing laws for cultural resources for all new projects.
- e. Develop law enforcement procedures for Archeological Resource Protection Act (ARPA) violations.
- f. Develop interpretive displays and brochures for cultural resources. Provide guided and self-guided tours for historic resources.
- g. Develop a cultural resources management plan.

4.2.3 Recreation

GOAL 9

Establish a consistent visitation record for Canyon Ferry.

OBJECTIVES:

- a. Write and maintain a program for input of annual fee envelope data from Canyon Ferry. Supplement this with on-site visitation and demographic surveys at five-year intervals. Maintain traffic counters at locations where specific information is desired, such as trend data at Hellgate, or visitation associated with eagle viewing.

GOAL 10

Meet demands for recreation and expand the variety of available recreation opportunities.

OBJECTIVES:

- a. Prepare a capacity analysis for Canyon Ferry so that demand can be more accurately assessed.

- b. Provide historical, natural resource, and wildlife interpretive tours around the reservoir. In particular, invest in interpretive tours around the WMA to increase use at the south end of the lake, provide increased disabled opportunities, and expand knowledge of the natural environment.
- c. Expand the variety of recreational experiences, from intensively-used, highly developed sites, to separate, more primitive camping and hiking.

4.2.4 Natural Resources

GOAL 11

Protect soils from natural and human-caused erosion.

OBJECTIVES:

- a. Physically designate campsites to prevent soil compaction and trampling of vegetation.
- b. Consider soil conditions when planning future facilities, and when considering more intensive use such as by ORVs.
- c. Continue application of magnesium chloride, or other environmentally acceptable treatment, on unpaved roads in the study area.
- d. Protect recreation sites from the effects of wave action where improvements or important natural resources are threatened.
- e. Revegetate or stabilize areas where soils are or will be disturbed to minimize erosion and improve visual quality.

GOAL 12

Protect and enhance water resources and quality.

OBJECTIVES:

- a. Request that the state Water Quality Bureau (WQB) design a standard water quality monitoring program for Canyon Ferry.
- b. Educate cabin site lessees and travel trailer users about the effects of sewage effluent and treatment systems.
- c. Continue WQB programs for agricultural operators within the study area boundary to reduce pollutants entering the reservoir.

- d. Evaluate and replace wells at some recreation sites.

GOAL 13

Identify, protect, and enhance native species and other important vegetation and wildlife habitat within and adjacent to the study area.

OBJECTIVES:

- a. Implement the 1992 Canyon Ferry Wildlife Management Plan prepared by DFWP, and monitor its progress.
- b. Conduct vegetation and wildlife inventories when considering development to assure protection of critical or sensitive species. Coordinate plans for endangered species protection with U.S. Fish and Wildlife Service.
- c. Prepare a weed management plan for the study area and involve cabin and concession site lessees.
- d. Continue to identify critical habitat as new wildlife data are gathered. Avoid incompatible development on critical habitat (e.g., wetlands, mule deer winter range, fish spawning habitat).
- e. Protect wildlife habitat on private land cooperatively with landowners through conservation easements, leases, or other acquisition techniques that are within the authority of the management agencies. Work out cooperative agreements with landowners to protect critical antelope habitat for the Townsend Flat antelope herd.
- f. Conduct periodic raptor surveys to expand knowledge of these species.
- g. Designate additional wildlife management areas in accordance with this plan.
- h. Enhance wildlife habitat per recommendations of the DFWP Wildlife Management Plans for the reservoir.

GOAL 14

Protect and enhance resident fish species and their aquatic habitat within the Canyon Ferry Reservoir/Missouri River system.

OBJECTIVES:

- a. Implement the Canyon Ferry Fisheries Management Plan (1993-1998) prepared by DFWP and monitor its progress.

- b. Enhance and stabilize the rainbow trout population by continuing to stock wild strains of fish, experimenting with new dispersal techniques and timing of stocking, and actively pursuing rehabilitation of degraded tributaries.
- c. Enhance the brown trout population by actively pursuing rehabilitation of degraded tributaries and by reintroducing brown trout fry into the Missouri River and selected tributaries.
- d. Obtain a better understanding for the dynamics of the yellow perch population by developing and utilizing improved techniques for monitoring trends in population abundance.
- e. Prevent the illegal introduction of new fish species into the Canyon Ferry Reservoir/Missouri River system to protect resident game fish species as well as sport fish species located in downstream waters.
- f. Continue to protect important spawning and rearing habitat within the river/reservoir system.
- g. Continue to address the impacts of reservoir operations on the fishery resources by working with the Missouri River Advisory Council.
- h. Continue to identify critical fisheries habitat as new data are gathered. Avoid incompatible development on or adjacent to critical habitat (e.g., spawning habitat, juvenile rearing areas).

GOAL 15

Expand and use existing knowledge of weather patterns around the study area to protect public safety and assist facility planning.

OBJECTIVES:

- a. Use localized weather data, and knowledge of weather-related constraints in facility location and planning.
- b. Locate an additional weather station at Canyon Ferry Village and at the south end to predict incoming weather systems, and provide an early warning system for recreationists.

GOAL 16

Preserve and enhance visual and esthetic resources around the study area.

OBJECTIVES:

- a. Develop and implement building and visual standards for all structural improvements on federal lands to ensure visual compatibility with surrounding land and water uses. Also consider elimination of unsightly structures or developments (e.g., roads, recreation-related improvements, breakwaters).
- b. Management agencies will participate in timber harvest planning with Helena National Forest staff to protect scenic qualities for the study area.
- c. Provide vegetation, or other natural screening, and distance buffers around and within recreation sites. This will screen campsites from one another and buffer varying land uses (e.g., the maintenance shop at Jo Bonner).

4.3 POLICIES AND PROGRAMS

Policies serve as the guide for future management and development decisions regardless of the alternative chosen. Policies and programs were created for four different management purposes: recreation, natural resources, rural residential, and supplemental policies and programs, such as administration and services.

A **policy** is a defined course of action for present and future decisions.

Policy: Timber sales affecting Canyon Ferry's natural systems or viewshed will require inter-agency sign-off.

A **program** is a plan of action to achieve a goal.

Program: The Department of Fish, Wildlife and Parks will begin an interpretive program to educate the public about the history of Canyon Ferry.

4.3.1 Recreation

During public scoping meetings, the public expressed interest in a greater diversity of recreational experiences at Canyon Ferry. Some wished for highly developed campsites with paved roads and full bathroom facilities. Others desired a primitive experience with little development. Many additional activities were mentioned and where compatible with environmental protection, were incorporated into the plan.

The focus of the recreation component of the plan will therefore be to provide recreational opportunities for a greater diversity and number of people. An emphasis has been made on improving and expanding existing sites prior to developing new ones. Recreation site development has been distributed around the reservoir to address the public comment that south and east side sites deserve more attention and investment. The vast majority of recreational development will be oriented toward camping and use of the water (mainly fishing), the two primary purposes for which people now visit the reservoir. Existing disturbed acreage associated with recreational site development is estimated at about 286 acres.

Three levels of management have been formulated for camping areas in order to offer a guide for future managers and to assess whether a diversity of experience exists around the reservoir. Conceptual plans may not reflect every amenity listed. However, if a site is proposed to include a majority of the improvements characterizing level A, B, or C, it is shown under that respective level.

| <u>Level A</u> <u>Developed</u> | <u>Level B</u> <u>Semi-developed</u> | <u>Level C</u> <u>Pioneer</u> |
|------------------------------------|---|----------------------------------|
| camping pad (paved or unpaved) | camping pad (unpaved) | designated camping area |
| dump station | pit toilet | possible pit toilet |
| flush toilet/showers | water within area (pump) | provide own water |
| water within area/faucet | table and grill each site | unpaved access |
| tables and grill each site | possible paving | pack in/pack out |
| paved access | garbage cans | |
| garbage cans/dumpsters | | |
| electrical hookups | | |

Sites by Levels of
Future Development

| | | |
|-------------------------|-----------------------|-------------|
| Hellgate (portion) | Hellgate (portion) | Confederate |
| Scooter Bay | Riverside | Goose Bay |
| Silos (part of area) | Silos (part of area) | Silos |
| Indian Road (portion) | Indian Road (portion) | Cottonwood |
| Ponderosa/Court Sheriff | White Earth | |
| | Chinaman's | |

Under the improvements listed below, seven new boat-docking areas, a new breakwater, new campsites, six new day-use areas, expanded disabled-accessible facilities, riparian protection, new and upgraded group use, two hiking trails and four nature trails, and access improvements potentially would be made. New latrines, fish-cleaning stations, landscaping, and the addition of electrical power to all recreation sites will all be considered during site improvements. The exact number of campsites and other facilities will probably be decided during future planning processes subsequent to a capacity analysis and gathering of visitation data.

Conceptual site maps are provided below to show potential substantial development of 13 sites. These site plans are strictly conceptual. Uses may vary from locations shown on each map. Site-specific and environmental review would be required prior to development. Minor improvements may take place on other sites. Of 24 developed recreation sites, eight are proposed for additional site improvements:

Riverside: Riverside would receive improved bald eagle viewing facilities, access improvements, new camping spaces, and an entry station (see Figure 17).

Cemetery Island: The island would benefit from an improved trail system, a new latrine, signing, and day-use improvements (see Figure 18).

Jo Bonner Group Day-Use: A group-use shelter, expanded parking, riparian protection for Magpie Creek, and shelterbelt and fence would be provided at Jo Bonner (see Figure 19). Camping would be eliminated at Jo Bonner.

Hellgate: Improvements at Hellgate would include a trailhead with parking, a full hook-up camping loop, designated group-use site, riparian protection, upgraded bathroom facilities, an interpretive nature trail, and additional barriers to protect the shoreline and direct access for boat launching (see Figure 20).

White Earth: White Earth would gain new access through the adjacent private land. The existing road would be converted to a footpath and tie in with trailhead north to Crittendon (see Figure 21).

Silos: Barriers defining the boundaries of the Silos area would be added to reduce resource damage from off-road vehicle use. Other major improvements could potentially include expanded day-use areas, a new concession site, and a breakwater (see Figure 22).

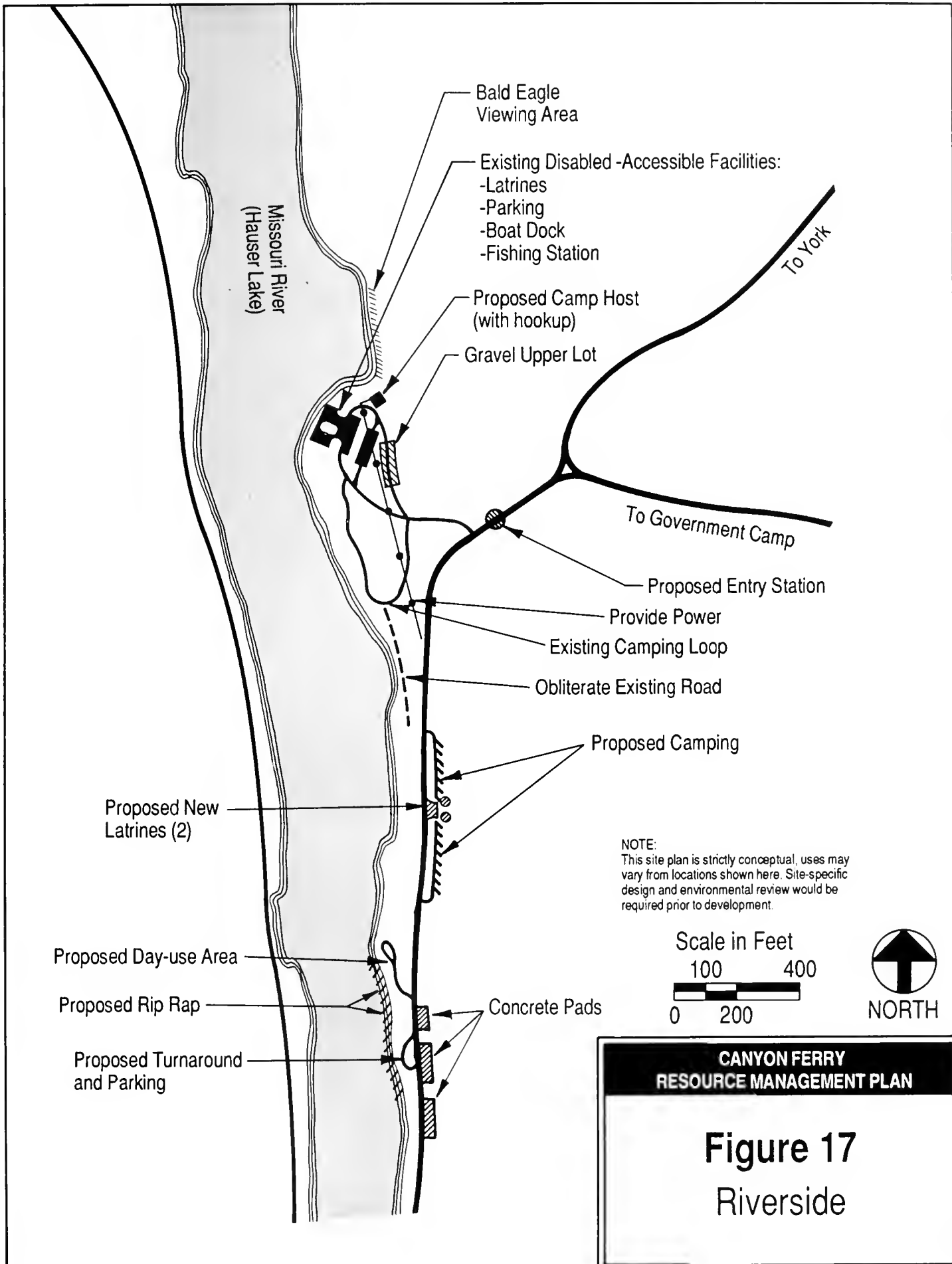
Indian Road: Indian Road is the proposed site of a new south-end visitors center, cooperatively managed and built by the management agencies, the U.S. Forest Service, and the community of Townsend (see Figure 23). In addition, campsites would be considered adjacent to the river and a new camping loop added to the east of existing campsites. Internal roads would be realigned to access new campsites and to allow visitors into the information center without paying a fee.

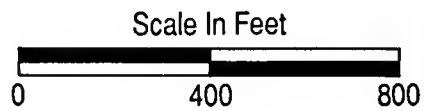
Confederate Bay: Confederate Bay would receive site improvements for natural resource protection, such as riparian protection for Confederate Creek, barriers to close some roads and trails, and a new latrine. The area is intended to remain a less-developed site and would serve as the southern trailhead for a trail connecting Hellgate to Confederate (see Figure 24).

Five sites are proposed for new development:

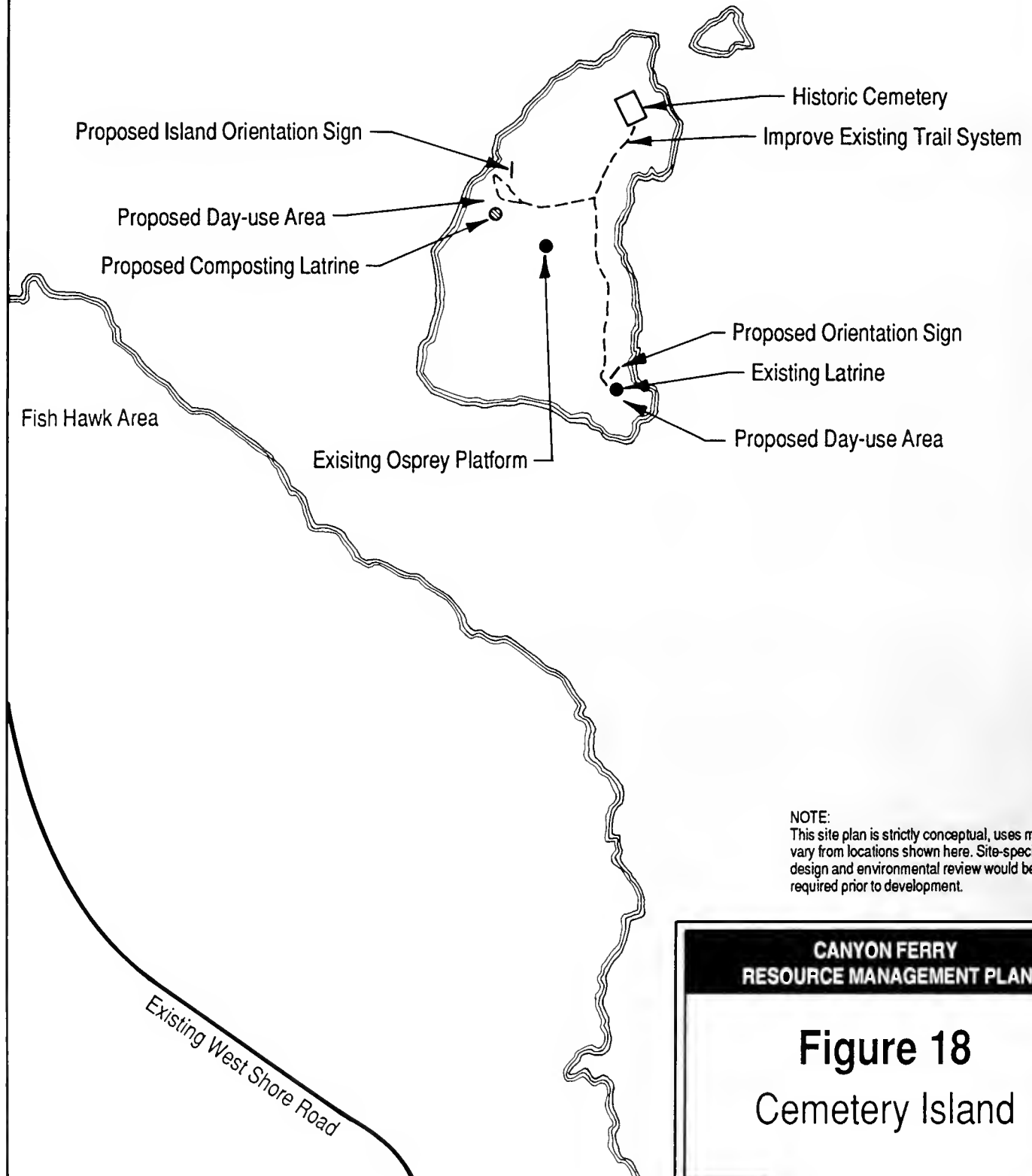
Scooter Bay: This area would be developed to accommodate campers, boaters, group camping and day use, and day use. Boat docks would be placed in sheltered bays, and access roads rerouted to reduce resource damage (see Figure 25).

Spring Creek Bay: The Spring Creek Bay site would serve chiefly as a trailhead parking area, and would benefit from road closures to the north and south. Areas to the north would be defined as walk in only. Access roads would lead south from here to the Goose Bay concession site (see Figure 26). Camping along the shore to the north and west would be eliminated.





CANYON FERRY LAKE



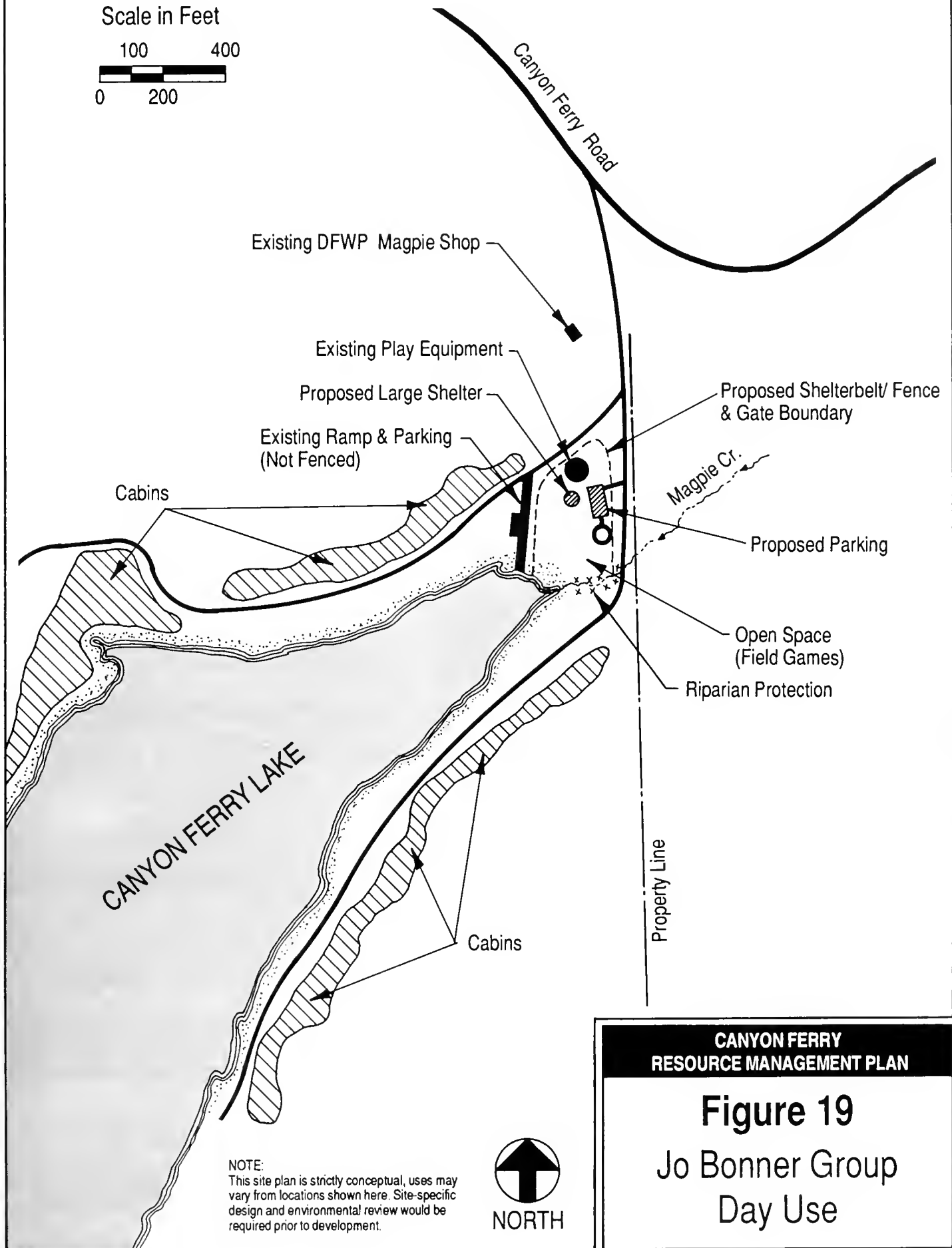
NOTE:

This site plan is strictly conceptual, uses may vary from locations shown here. Site-specific design and environmental review would be required prior to development.

**CANYON FERRY
RESOURCE MANAGEMENT PLAN**

Figure 18 Cemetery Island

Scale in Feet



NOTE:

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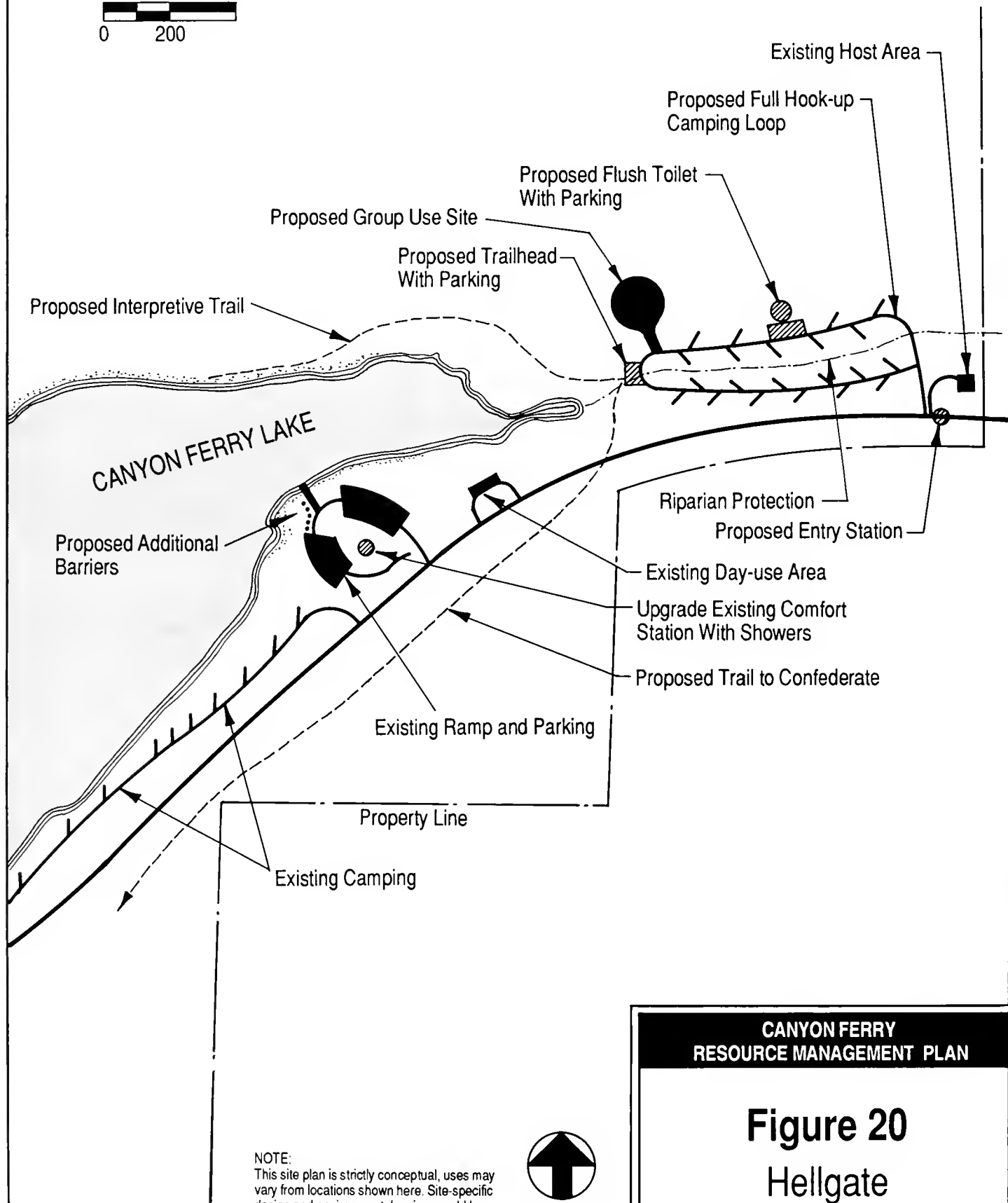


NORTH

**CANYON FERRY
RESOURCE MANAGEMENT PLAN**

Figure 19
Jo Bonner Group
Day Use

Scale in Feet



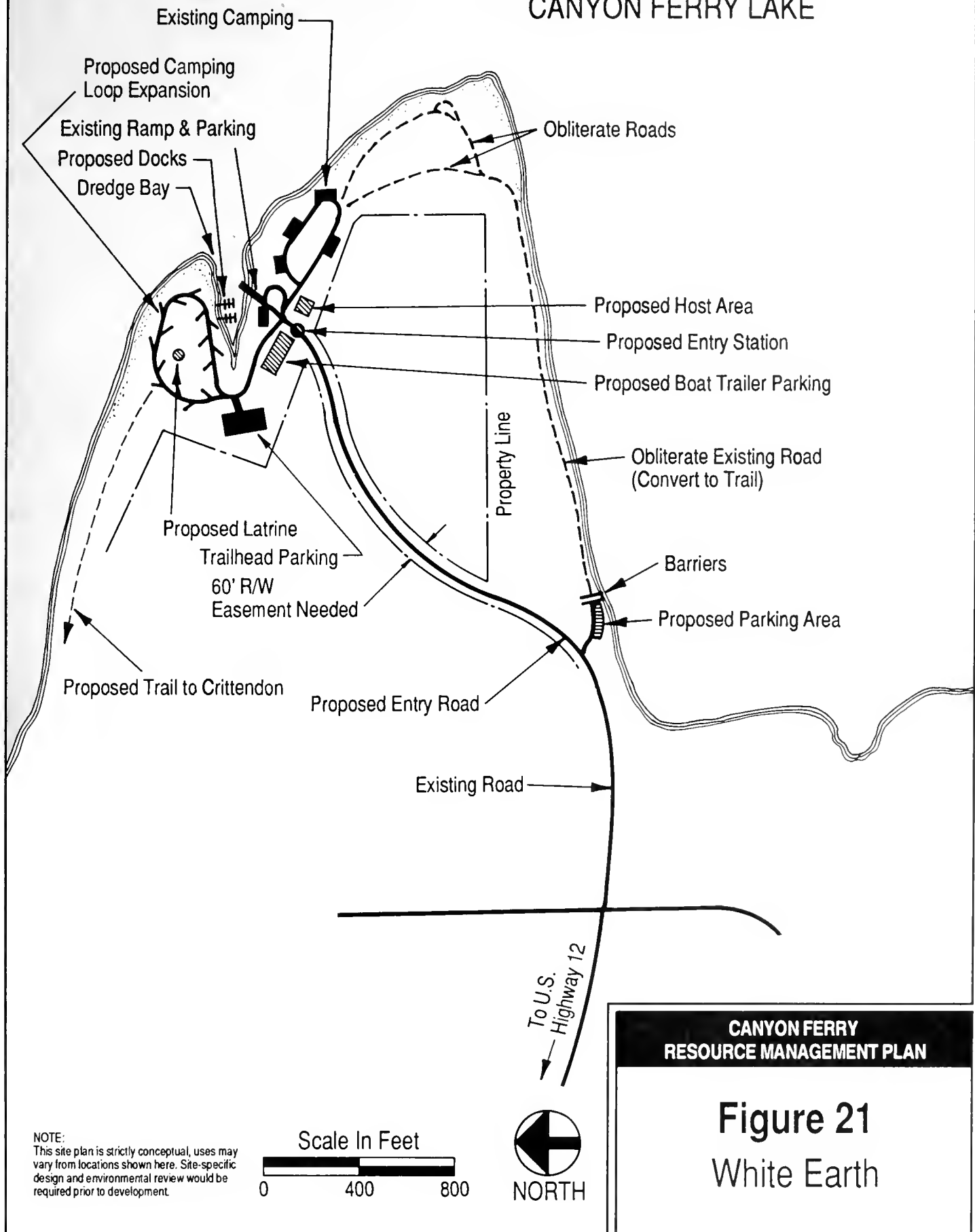
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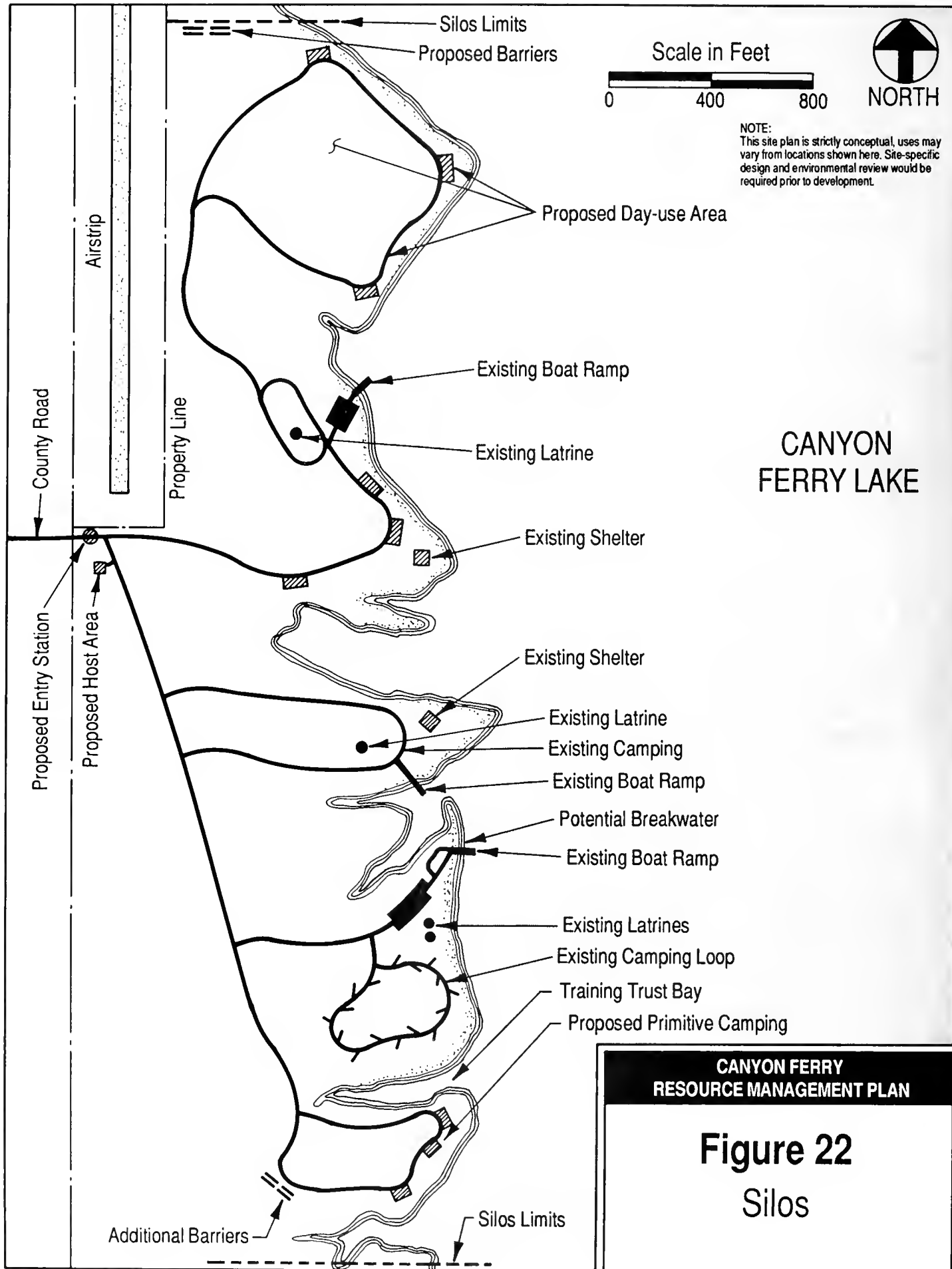


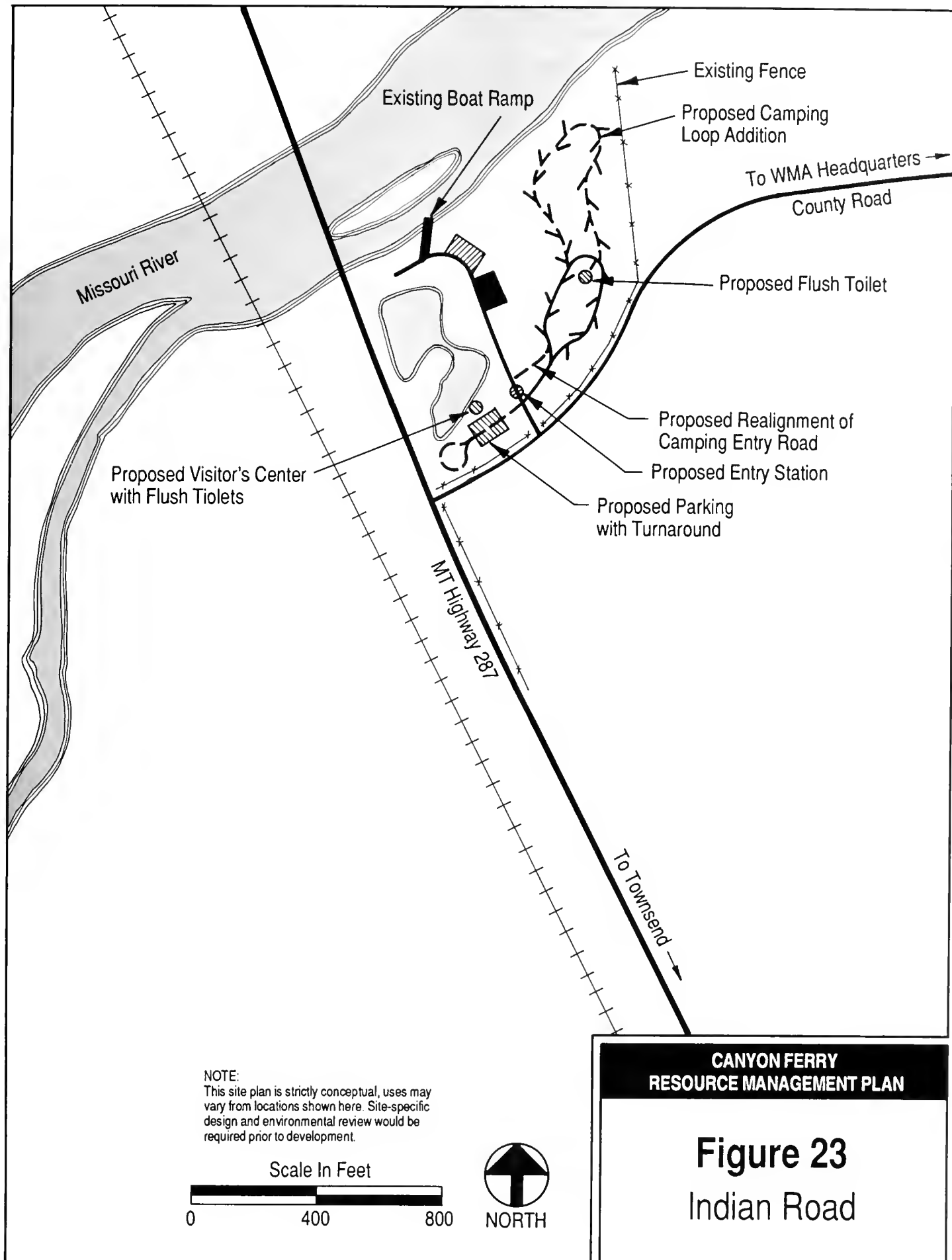
CANYON FERRY RESOURCE MANAGEMENT PLAN

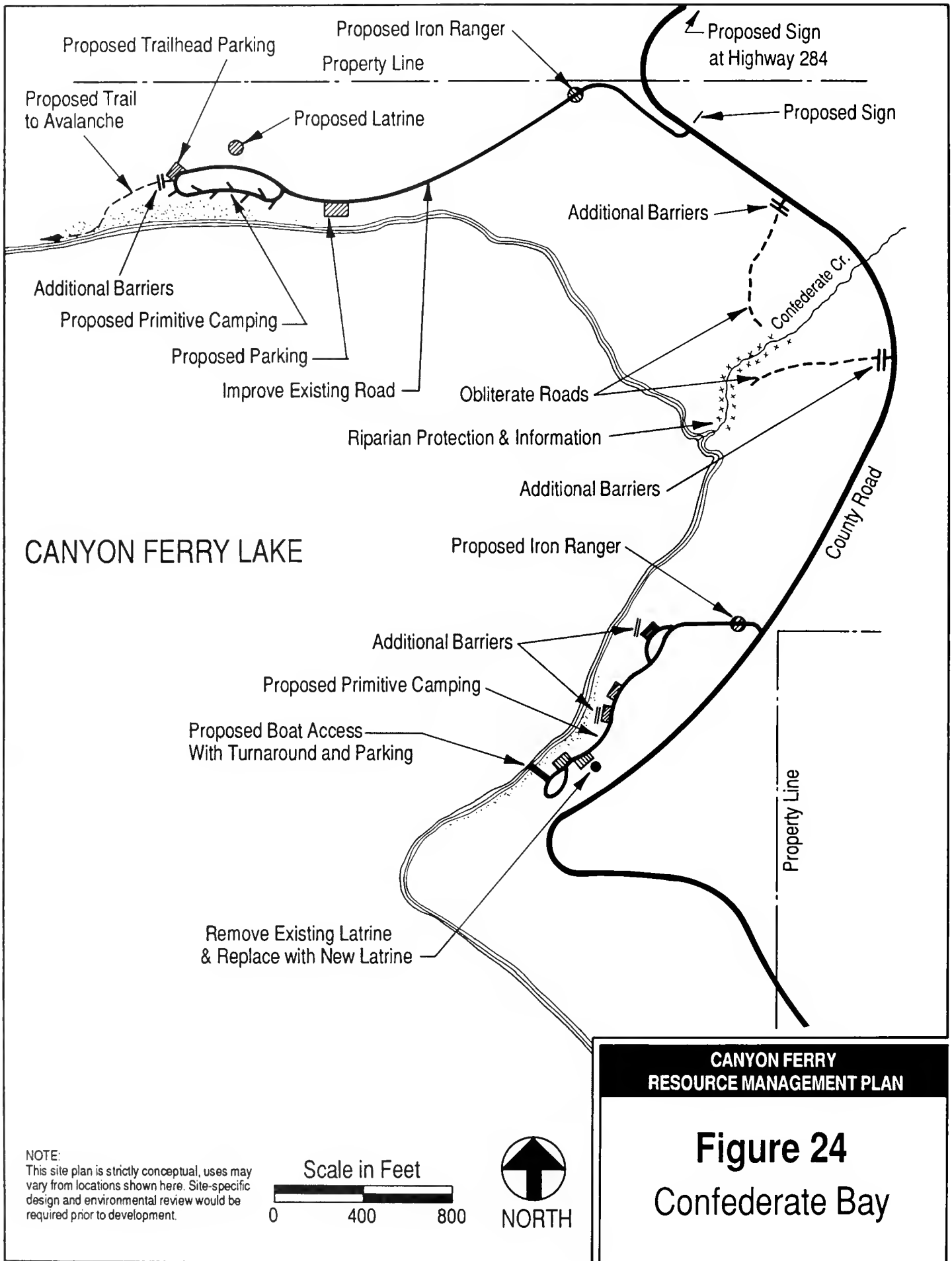
Figure 20
Hellgate

CANYON FERRY LAKE

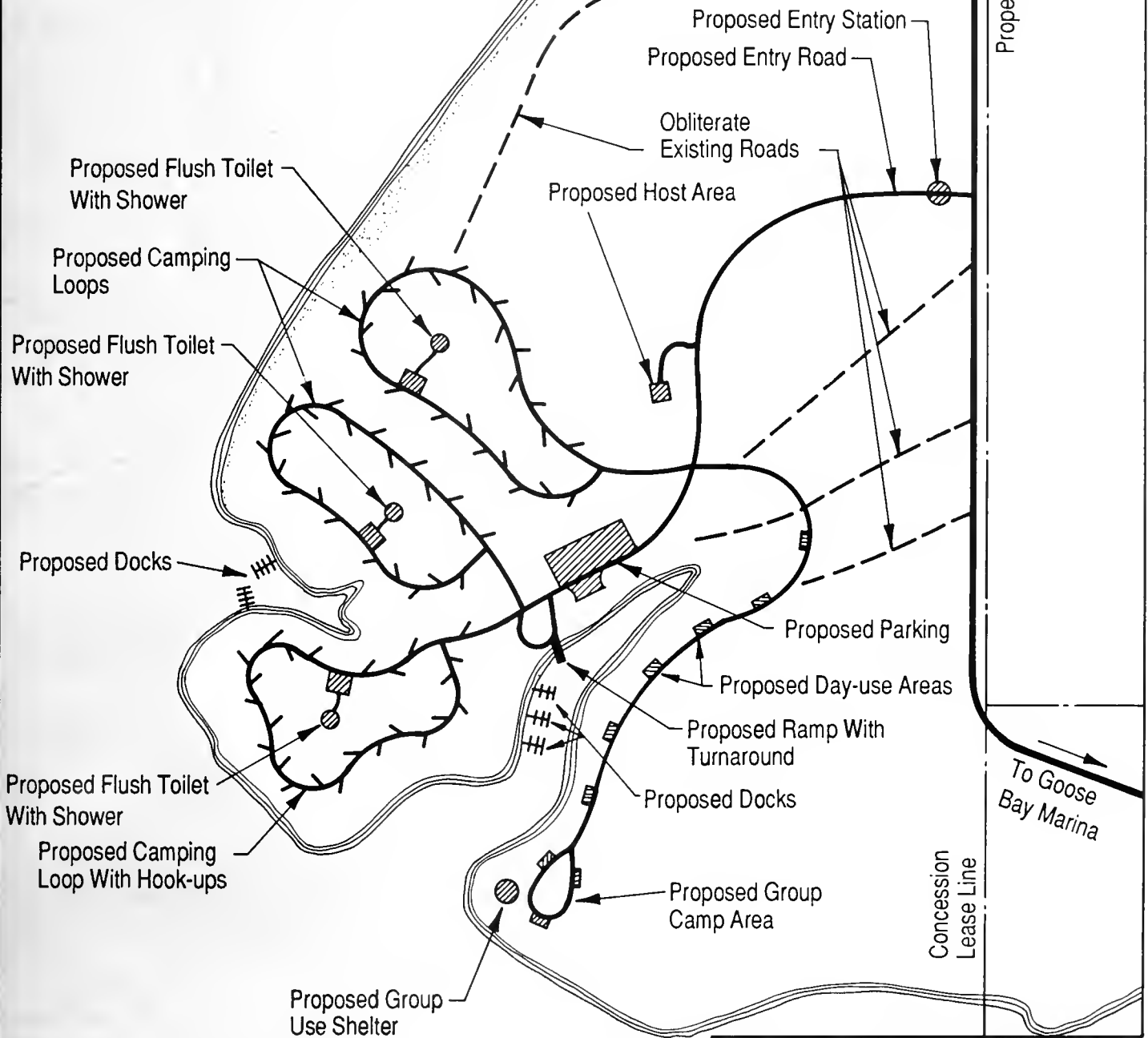






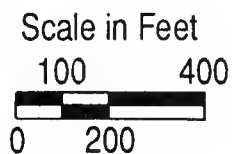


CANYON FERRY LAKE



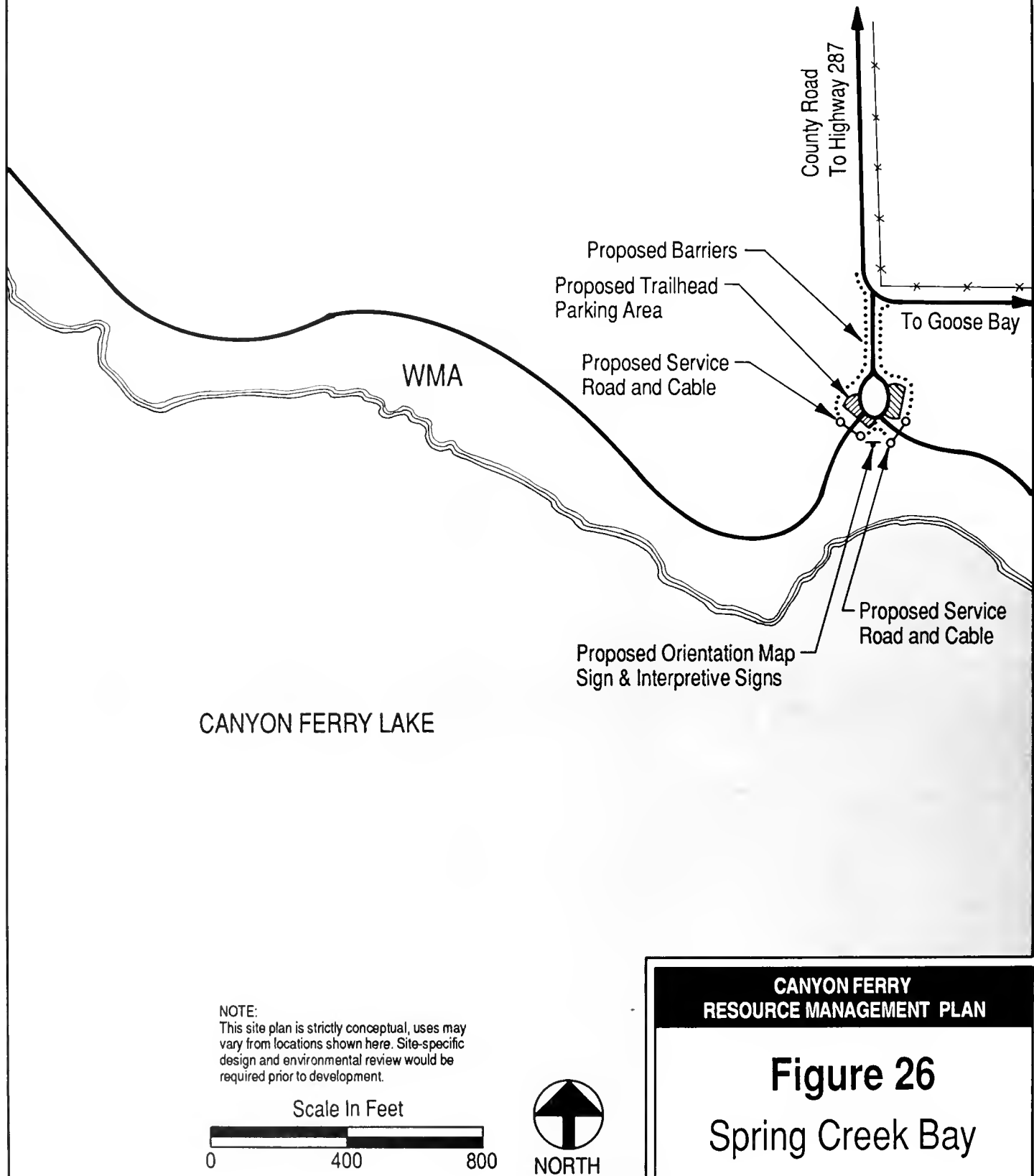
CANYON FERRY LAKE

NOTE:
This site plan is strictly conceptual, uses may vary from locations shown here. Site-specific design and environmental review would be required prior to development.



CANYON FERRY RESOURCE MANAGEMENT PLAN

Figure 25
Scooter Bay



**CANYON FERRY
RESOURCE MANAGEMENT PLAN**

Figure 26
Spring Creek Bay

Missouri River Nature Trail: This proposed 2-plus mile nature trail would include a parking area, pedestrian bridges, and directional signs from Townsend and Highway 284 (see Figure 27). Seasonal closure of this trail may occur during hunting season, or for resource protection.

Canton Road Trail: At Canton Road, emphasis would be placed on disabled-accessible facilities within the wildlife management area, including a trail, parking, latrine, bird-viewing blind, and entry gate (see Figure 28).

Ray Creek Trail: Ray Creek Trail again emphasizes disabled-accessible facilities within the wildlife management area. A viewing blind, trail, latrine, entry gate, and signing are all proposed here (see Figure 29).

Two extensive hiking trails are also at the conceptual stage; one on the west shore from Crittendon to White Earth, and another on the east shore from Hellgate to Confederate. Both would require on-site design and environmental review before being built. The trail on the west shore traverses rugged breaks and steep slopes and would potentially pass through area used by bald eagles. Presence of bald eagles in any given year could limit the use of this trail seasonally. Exact trail length is difficult to estimate, but would probably range between 10 and 12 miles.

The east shore trail crosses more level terrain and has few environmental conflicts. It takes in an area used by antelope hunters and so will provide walk-in access for hunters as well. Trail length is estimated at 20 miles.

Policies and Programs

OFF-ROAD VEHICLE USE. All Reclamation lands are closed to off-road vehicle use, except for an area or trail specifically opened to use of off-road vehicles in accordance with the provisions in 43 CFR, Part 420.21. The provisions of Part 420 establish regulations for off-road vehicle use on Reclamation lands to protect land resources, promote the safety of all users, minimize conflicts among the various uses, and ensure that any permitted use will not result in significant adverse environmental impact or cause irreversible damage to existing ecological balances. Management agency(cies) will work with local ORV user groups to identify and designate ORV use areas on nearby public lands. If this effort is unsuccessful, designating an ORV use area on Reclamation lands will be considered subject to finding an area that would sustain only minimal environmental impacts. ORV use designation must be made in accordance with 43 CFR, Part 420.21. If a designated area sustained significant resource damage as determined by management agencies it could be subsequently closed to ORVs.

CAMPGROUND MAXIMUM STAY LIMITS. All campgrounds will have a 14-day maximum stay limit. This policy encourages long-term users of the area to make sites, especially prime campsites, available for others. Consideration will be given to reducing maximum stay limits and developing a reservation system at popular campsites.

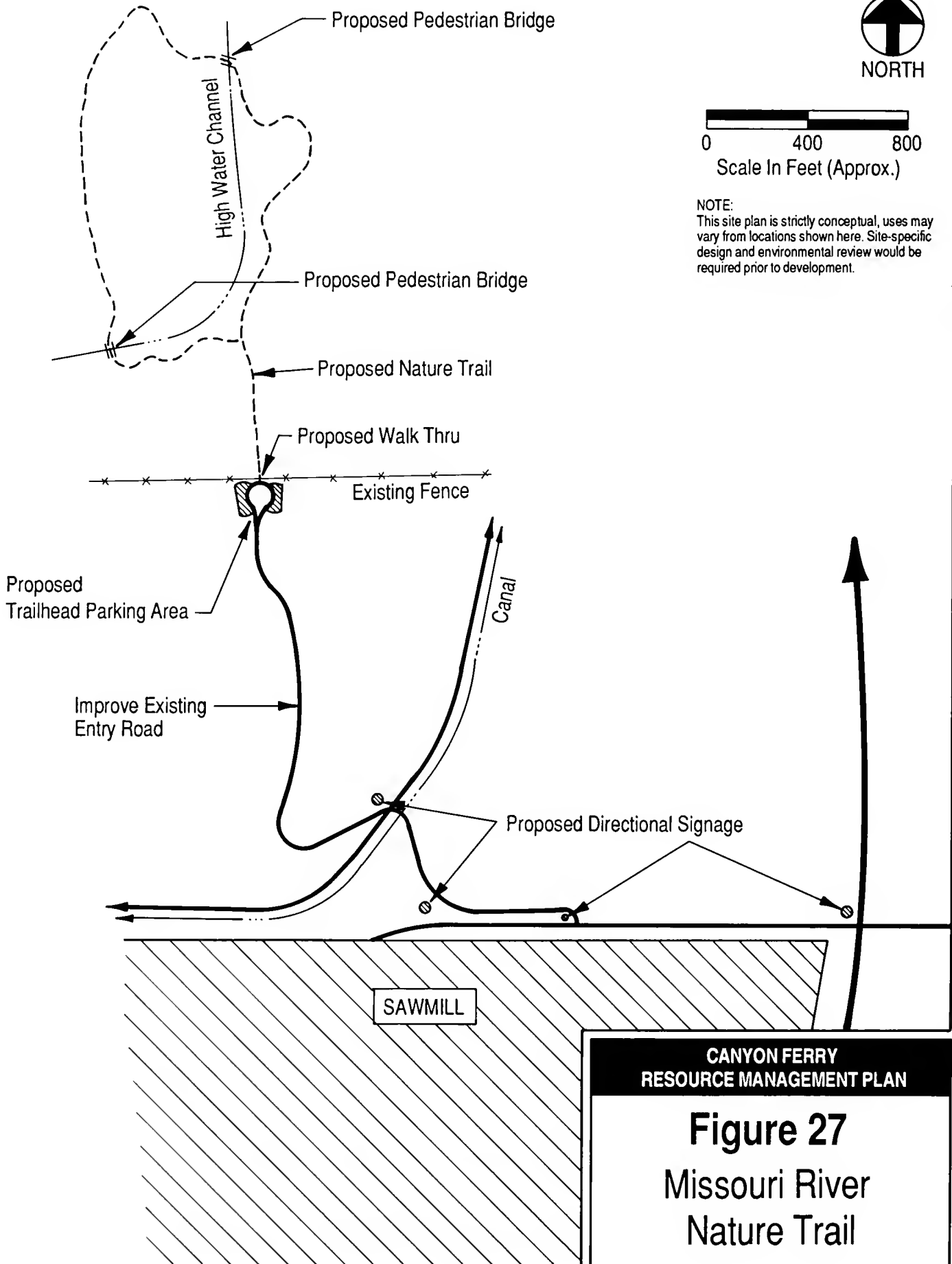
OVERFLOW CAMPING. All camp spaces will be designated within recreation sites, except for pioneer camping areas. When campgrounds are full, campgrounds will be closed to



0 400 800
Scale In Feet (Approx.)

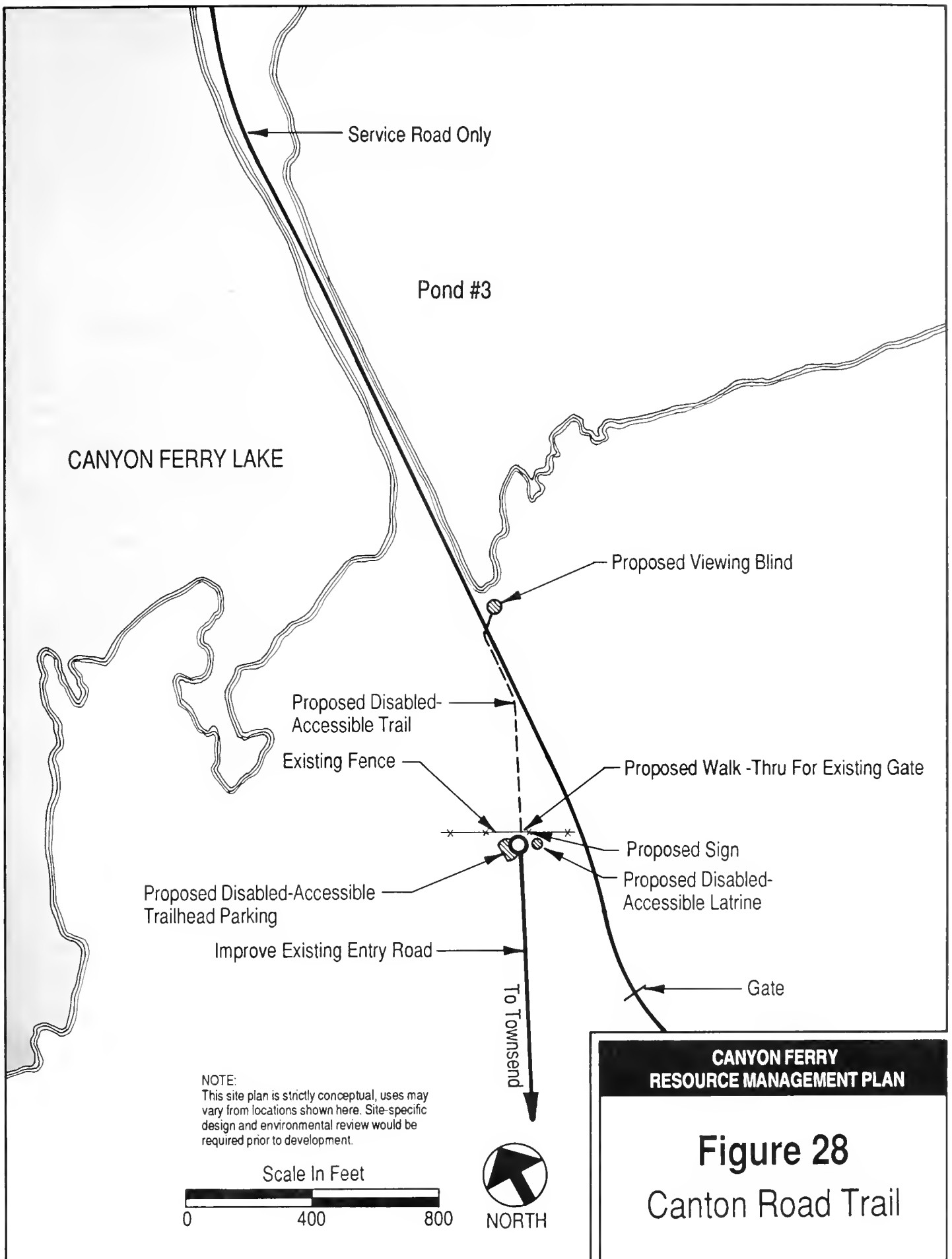
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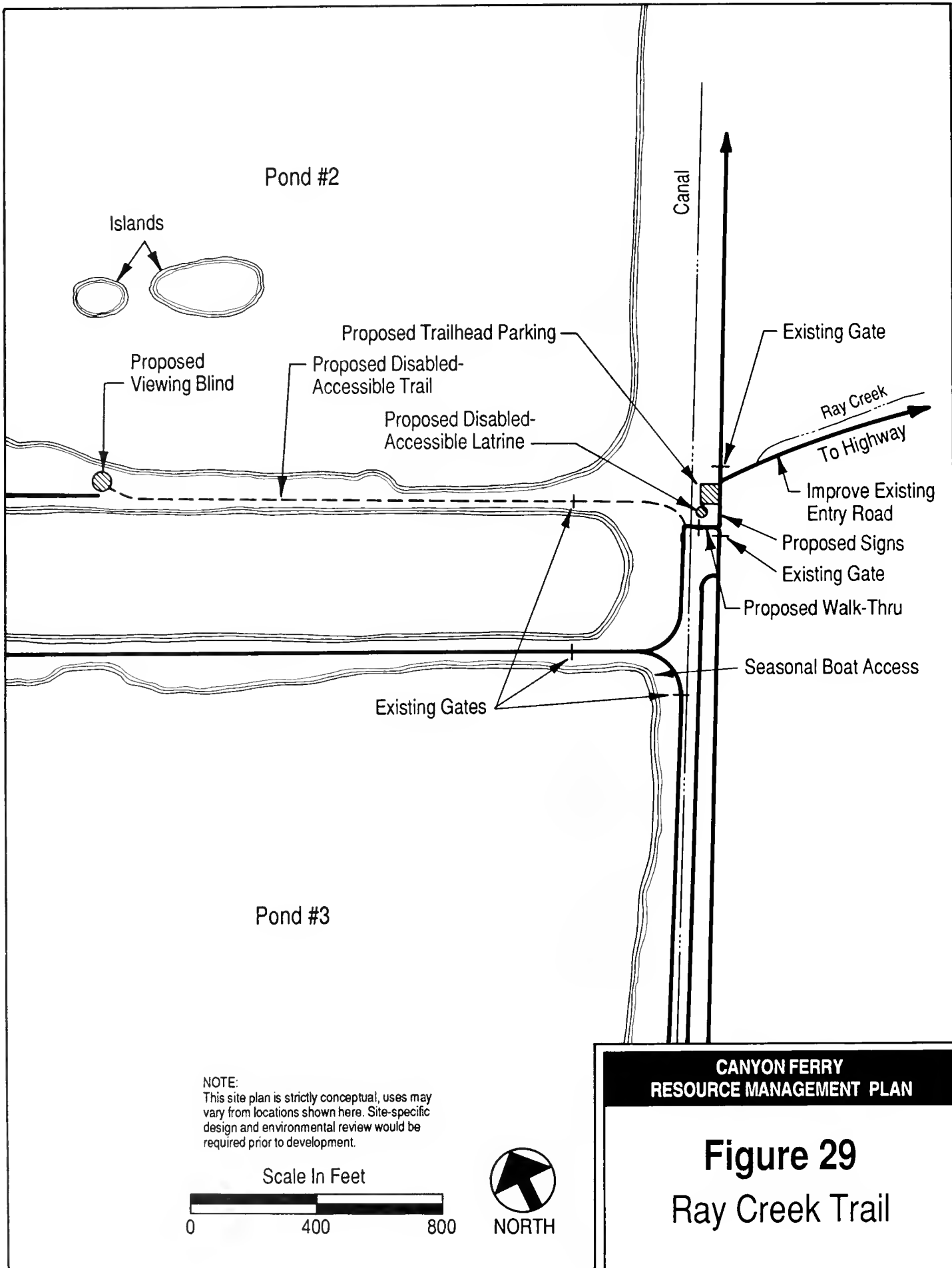
This site plan is strictly conceptual, uses may vary from locations shown here. Site-specific design and environmental review would be required prior to development.



**CANYON FERRY
RESOURCE MANAGEMENT PLAN**

Figure 27
Missouri River
Nature Trail





additional users. Visitors will be directed to other recreation sites where spaces are available. This policy is intended to address park management, visitation record-keeping, to reduce resource damage, and protect public health and safety.

GROUP CAMPING. Areas will be considered for this use where specific and detailed site plans are developed.

AREAS AVAILABLE FOR CAMPING. Camping will be prohibited on all lands outside designated camping areas. Boat camping will be allowed along the shoreline outside of designated camping areas as long as users comply with pioneer camping rules (i.e., supply personal drinking water, self-contained sanitation facilities, and pack out all garbage). Additional boat and pioneer camping restrictions will be considered if resource damage occurs or public health and safety problems arise. Camping restrictions are based on the need to control fire danger and to protect public health.

FEES. The following day use and camping fee structure is proposed, recognizing that if management agencies or policies change, fees may change. State Park use fees will apply on all lands within the study area, except within WMAs, concessions sites, and for boat and pioneer camping areas. WMAs will be free of charge except that camping fees will apply in designated campgrounds. Designated pioneer camping (e.g., portions of Confederate, Cottonwood, part of Silos, and Goose Bay) and boat camping outside designated campgrounds are also free of charge until such time as resource damage, maintenance costs, or other factors warrant fees.

TRAIL USE. As trails are developed, they will be evaluated, and use restrictions developed where necessary. The extended trails along the east and west shores are removed from most conflicting adjacent uses except where they intersect developed recreation sites. Trail planning will be necessary to route trail users around these sites. Signs describing unauthorized uses will be posted at all trail access points.

FIREARMS: The discharge of firearms is prohibited in all developed recreation sites, and cabin lease sites. Wildlife management areas have special regulations relating to the types of firearms that may be used, seasons of use, and safety zones where firearms may not be used. Specific regulations for these areas should be consulted.

VISITOR INFORMATION AND INTERPRETIVE PROGRAMS. Improved dissemination of visitor information and initiation of public awareness of the cultural and natural history of the area are a focus of this plan.

AIRCRAFT. The operation of aircraft on Reclamation lands is prohibited except on the Canyon Ferry Airport, located near Silos. This policy also applies to float plane use; aircraft may not be landed on the reservoir except in extreme emergency. This policy was established to protect the safety of other users.

4.3.2 Natural Resources

While this plan proposes to expand recreational opportunity within the study area, it must do so in an environmentally sensitive manner. Previous sections of this report have established that

study area lands support a healthy variety of plant and animal species and that habitat improvement for these species is possible and desirable. DFWP has prepared specific management plans for both the existing Wildlife Management Area (WMA) and study area lands outside the WMA. These plans will provide the wildlife management framework for the study area.

The existing WMA at the south end of the lake, and bald eagle and raptor habitat has been the focus of wildlife managers at Canyon Ferry in the past. During the course of this planning effort, wildlife managers re-examined wildlife resources and proposed the extension of the existing WMA northward on both the east and west sides of the reservoir. In addition, two new WMAs are proposed; on the west shore between Crittendon and White Earth, and on the East Shore between Hellgate and Scooter Bay.

The proposed west shore area encompasses critical mule deer winter range, bald eagle use area, sites meeting 1989 Federal wetlands criteria, steep slopes, and culturally sensitive areas (see figures 15 and 16).

The proposed east shore WMA includes a relatively undisturbed portion of land surrounding the reservoir. The area includes a waterfowl staging area, antelope range, culturally sensitive sites, and sites meeting 1989 wetlands criteria.

Bald eagle management will continue to be a high priority for wildlife managers as long as the eagles are present at Canyon Ferry. The Hauser Dam Bald Eagle Management Strategy is the current management document for eagles at Canyon Ferry below the dam. Interagency management will continue around other areas of the reservoir (see Chapter 3).

In addition to WMAs and bald eagle management areas, other important natural features have been mapped and discussed (see Chapter 3 and Figure 15). These features include floodplains, prime soils, spawning habitat, waterfowl brooding and staging areas, wetlands, an endangered plant species, and noise sensitive areas.

Before site development can occur within the study area, environmental reviews must occur and public review and involvement would be initiated. On federal lands, the National Environmental Policy Act must be met. The Montana Environmental Quality Act must be met if state activities are conducted or monies used.

Policies and Programs

GRAZING. Grazing is considered incompatible with many recreation uses at Canyon Ferry. As such, it is prohibited on Reclamation lands except on wildlife management areas where grazing can be demonstrated to be an environmentally compatible management tool. The term of grazing leases shall be limited, and at end of their respective terms will be subject to review and possible termination based on the need for grazing as a management practice, and the performance of the lessee. Fees will be based on comparable local leases.

RIPARIAN PROTECTION. It is the intent of this plan to reverse damage to riparian corridors that has taken place and to protect riparian areas from further damage.

WEED AND INSECT CONTROL: Both weed and insect control plans need to be prepared for the reservoir. These plans will describe infestation areas and environmentally acceptable alternatives to spraying, and will involve the public.

NOISE CONTROL. In sensitive noise areas designated on Figure 15, management agencies will continue to try and resolve noise conflicts through nonregulatory means. If nonregulatory methods aren't successful, agencies may consider water surface use restrictions.

VEGETATION ENHANCEMENT. Landscaping and riparian protection will be incorporated into all development plans for the study area. Native and drought-tolerant species will be used as much as possible. The viability of a vegetation demonstration site on study area lands will be examined. The purpose of this program would be to raise acclimatized species for planting around the reservoir, and to serve as an interpretive site for the public. Where ORV or other human uses has caused substantial resource damage, barriers will be placed and vegetation rehabilitated.

WETLANDS. Development in wetlands is discouraged. Any trail through a wetland area will be designed for least disturbance (e.g., an elevated wooden walkway or other structure designed with assistance of agency experts) and/or mitigated.

FENCING. Completing boundary fencing of the study area is an ultimate goal of this plan. In the interim, cattle trespass, particularly on the west shore, is conflicting with boat access sites and is causing some resource damage including weed infestation, vegetation removal, and erosion. These areas will be identified and fenced out until boundary fencing is completed. Management agencies will work with BLM to control trespass livestock from their lands adjacent onto the study area until boundary fencing is completed.

EROSION CONTROL. ORV use was limited in the plan due to the potential for resource damage to soil, water, and vegetation. In addition, areas where ORV trespass has occurred, barriers, signing, and fencing will be considered. Designation of campsites, traffic control at boatramps, revegetation of damaged areas, and additional landscaping are all proposed to control erosion.

MINERAL DEVELOPMENT. Mineral development will be prohibited on federal lands where sub-surface rights are controlled by the federal government to protect recreation and natural resource values.

WATER QUALITY PROTECTION. The State Water Quality Bureau will be requested to design a standard water quality testing program for the reservoir. Education programs aimed at camper and boat users, cabin site leasers, and agricultural operators will be pursued. Restrooms will be provided at all developed recreation sites and at least two additional sanitary dump sites will be provided, at Silos and near Canyon Ferry Village. A floating sanitary dump station will be located at one of the concession sites. This facility will be paid for by management agencies. Concessionaires will be encouraged to provide fish-cleaning stations at all marinas. At such time as concessions agreements are renewed or new agreements issued, specifications regarding minimum facilities to be provided, compliance with laws and pollution will be included. Items that will be reviewed in these agreements will include public restrooms,

trash receptacles, fueling facilities that meet EPA standards, emergency and standard shut-off systems for gas pumps, and a chemical fire retardant system. The management agencies will prepare an emergency spill management plan for the reservoir.

VISUAL QUALITY PROTECTION. In order to protect and enhance visual qualities within the study area and its viewshed, future public and private development within the study area will be subject to building and visual standards adopted by the managing agencies. New structures will be screened from other recreational uses by vegetation, topography, or other natural screening.

CULTURAL RESOURCES. It is the intent of this plan to comply with all laws protecting cultural resources and to increase the level of knowledge and understanding of those resources within the study area. The managing agencies will be responsible for paying for archeological investigations necessitated by their actions. The cost of cultural investigations necessitated by private parties will be borne by those parties. Cultural/historic interpretive programs will be developed.

ENVIRONMENTAL PROTECTION. Appropriate environmental compliance will be completed prior to the development of new facilities. Site-specific surveys for rare and threatened species, wetlands, cultural resources, and critical habitat will be conducted. Overall policy is to avoid impact to such resources. Where impacts did occur they would be mitigated.

4.3.3 Rural Residential

There are two types of rural residential development that will be addressed in this section; cabin sites and adjacent rural residential development. There are 265 cabin sites leased for private use, located on the northeast and -west portions of the reservoir. These sites are an average size of about one-half acre and do not reach to the shoreline; a narrow band of land between the cabin sites and the high water mark is reserved for Reclamation purposes. Within this narrow band of land, cabin site lessees have placed boat docks, landscaping, retaining walls, boat houses, and other improvements. These structures have changed the character of the shoreline from a natural landscape to a residential landscape.

Permitting for encroachments on public lands has been inconsistently enforced to no single standard. In 1992, the DFWP responded to his problem by initiating discussions with the cabins site lessees to formulate building standards for the cabin sites and encroachments along the shoreline. These standards will eventually be adopted and uniformly enforced by the management agencies. Public access will continue to be allowed along the shoreline in encroachment areas and on privately built docks.

Rural residential development on lands adjacent to the study area are primarily located on the north shore. However, many other lots have been divided and are expected to be developed along the north and east shores. As they do, management agencies will experience increased conflicts between park users and rural residents, more requests for private access to the shoreline, and potential traffic conflicts on park access roads. An example of this is an on-going request for drive-in access to the shoreline from a group of residents in a nearby subdivision. Although

the request for drive-in access has been denied, trespass, public property damage, and continued conflict has resulted.

Policies and Programs

NEW ACCESS. Exclusive private access to the shoreline will not be allowed. The exception to this will be walk-in access via stiles over boundary fences. This policy is based on a principle of fairness; proximity to the reservoir does not garner special privileges of use. Whether users live one-quarter or 100 miles from the reservoir, all fees and access rules apply equally. Requests for new public access roads will be considered on their individual merit and need.

BUFFER ZONES. New and improved site development will include consideration of buffers between recreation sites and adjacent development, including concession sites. Such buffers may include distance, fencing, landscaping, and topographical separation.

EXPANSION OF CABIN SITE LEASE AREAS. (policy dated February 29, 1980). Because of increased demand by the recreating public at all land and reservoir areas in the Region, it shall be the policy of Reclamation's Great Plains Region to curtail further development of cabin sites on all lands under the jurisdiction of the Regional Director.

PROVISION OF SERVICES. The original purpose of the cabin sites was to provide summer recreational use of the reservoir. As such, the agencies do not intend to provide year-round services to the sites, including plowing of winter roads, and quasi-municipal services such as garbage collection.

CABIN SITE PERMITS. Cabin sites at Canyon Ferry are permitted on public lands in designated areas. Holders of cabin site permits (or leases) are allowed to construct improvements within their permit sites on public lands. The cabin site permit program is designed to generate a fair-market-value revenue for the managing agency and to provide increased recreation opportunity at the reservoir. The cabin site permit program may be wholly or partially terminated in the future if the managing agency determines that the cabin site areas are needed for other purposes, such as expanding a campground, or building a new marina. In such an event, cabin permittees would be required to vacate their cabin site and remove their cabins or other improvements within a reasonable amount of time. Current Reclamation policy prohibits the expansion of the cabin site areas.

Uniform Comprehensive Permit (UCP). The rapid and sometimes unregulated development of the cabin site areas has led to a confusing array of permits and permit requirements that have strained the ability of both the managing agency, and the permittee's to make sense of the current on-site and off-site developments in the cabin site area. To insure protection of the public resource and the interests of private parties using public land for cabin sites, the managing agency will implement a new, uniform, comprehensive permit system by September 1, 1995. Each individual cabin site will be covered by a single uniform, comprehensive permit (UCP) that will clearly list and describe all existing on-site and off-site developments to be allowed for that site. All existing permits will be superseded and canceled by the new UCP.

Trespass. Except for the four kinds of permissible off-site development listed below, any surface disturbing activity conducted by a cabin site permittee, or their agency, outside the legal boundaries of their cabin site (lot), is considered trespass. Trespass activities include but are not limited to the construction and/or maintenance of developed lawns and gardens, underground sprinklers, boathouses, rail systems, storage sheds, and garages. Any structure or activity not included in a UCP will be considered trespass after September 1, 1995.

All trespass developments or uses will be discontinued and removed from public property by September 1, 1995. Those developments or uses still in existence after September 1, 1995 may be removed by the managing agency at any time. The individual(s) responsible for the trespass will be charged for the cost of removal and disposal. No sale or transfer of a cabin site permit will be allowed after September 1, 1995, unless all authorized off-site developments are under a UCP, and unless all unauthorized structures are removed and all trespass charges resolved.

Permissible Off-site Development. Four kinds of off-site development may be allowed, subject to the provisions of this plan, and provided that they are approved by the managing agency and included in the UCP. They are: boat docks; erosion control structures (retaining walls); water pumps; and access routes to the cabin site.

- Boat Docks. All boat docks must be included in the new UCP and will be subject to consistent standards for construction, operation, maintenance, and removal. A U.S. Army Corps of Engineers Section 404 Permit must be obtained by the permittee before the boat dock can be included in the UCP. The UCP will allow for periodic inspection by the managing agency to ensure necessary maintenance is performed. Additional fees will be assessed against holders of a UCP that choose to place a boat dock in the reservoir.
- Erosion Control Structures. Structures, including retaining walls, will only be approved where the managing agency determines that such a structure is needed to protect improvements within the leased site. All off-site erosion control structures must be listed in the UCP, and must adhere to design standards that the managing agency may develop. A U.S. Army Corps of Engineers Section 404 Permit must also be obtained by the permittee before the structure can be included in the UCP.
- Water Pumps. For safety reasons, electric, submersible pumps will no longer be allowed in the reservoir. Cabin site permittees currently using these systems will have until September 1, 1995, to remove these pumps. Aboveground, suction pumps are permissible when listed in the UCP, and inspected and approved by the managing agency. Permittees installing such pumps will also be required to obtain an Army Corps of Engineers Section 404 Permit. Electrical pumps must be installed and operated according to the requirements of the National Electrical Code.
- Access Routes. Permittees may be allowed to construct and maintain certain off-site access routes to their cabin sites when such routes are determined by the managing agency to be necessary for safe access to the cabin site. Access routes

may include stairs to cross steep terrain. Any access route that includes constructed works, like stairs or landings, must be listed in the UCP.

Season of Use. As year-round recreation opportunity exists at Canyon Ferry Reservoir, year-round occupation of cabin sites is allowed. However, cabin permittees are cautioned that the managing agency is not responsible for providing year-round services, including law enforcement, fire protection, and snow plowing. In particular, winter recreation use is generally not sufficient to justify the expense required to provide certain services in the winter.

On-site Development. Construction of new cabins or improvements to existing cabins within individual cabin sites may be allowed provided that written plans for such improvements are submitted to the managing agency prior to construction. The managing agency shall have 90 days from receipt of a written request to approve or deny such a request. The managing agency must determine if the proposed improvements are consistent with sound building designs and practices. Cabin site permits are not issued in perpetuity, and in constructing any improvement to their cabin site, the permittee assumes the risk that they may eventually be required to remove their improvements and vacate the premises if their cabin site is needed for other purposes. All existing cabin sites will be inventoried by September 1, 1995, and all improvements will be listed in the UCP. The managing agency along with representatives of the CFRA will conduct annual inspections of all cabin sites after the UCP is in place.

- Only one (1) single family dwelling will be permitted on each leased lot regardless of size of lot.
- Recreation cabins will have a maximum of one thousand (1,000) square feet of total living space. Existing cabins above this maximum will be exempt from this maximum until such time as the cabin is replaced for any reason whatsoever.
- All buildings will be constructed in conformance with applicable state building codes, except as otherwise required herein or as otherwise required by other applicable codes.
- All building construction and improvements will blend into the natural surroundings.
- Should cabin site lessees elect to create an architectural review committee, then all building applications would be submitted to and approved by the committee before being submitted to Reclamation.

Septic Systems. All cabin site septic systems should be inspected by Lewis and Clark County Health Department to insure that applicable waste water disposal standards are being met, and to insure that untreated effluent is not seeping into the reservoir. After September 1, 1995, the managing agency will not approve the transfer/sale, or renewal of any cabin site permit without proof of a current Lewis and Clark County septic system permit. Additional land outside the cabin lease site will not be used to meet county septic system and health standards. In areas where soils or terrain are not appropriate for drainfields, the occupant will either have to have waste water pumped from a water tight tank, or develop other acceptable alternatives.

CABIN SITE LEASE FEES. Cabin site lease fees should be adjusted to reflect current market values and lease fees. A new land appraisal should be prepared for a market value basis.

4.3.4 Reservoir Management and Other Supplemental Policies and Programs

RESERVOIR LEVELS. During the summer, Canyon Ferry Reservoir will be operated at an approximate minimum elevation of 3,796 above mean sea level, except during periods of extreme drought, to ensure optimum recreation use and wildlife values. Whenever possible, spring and fall water levels will range between 3,785 and 3,792 for fisheries and waterfowl. When water levels are low due to drought, recreation aspects will be secondary to maintaining water levels downstream in the Missouri River.

CONCESSION (LAND USE) AGREEMENTS. A Memorandum dated October 7, 1991, from the Secretary of the Interior, sets a moratorium on entering into or renewing long-term concession agreements until the Secretary has concluded concessions management policy review. The Secretary's instructions also allow for exceptions. Exception approval is not necessary if the land agreement or authorizing document extends a currently approved agreement or authorization for no more than 6 months with no right of renewal. Any new land use agreement or use authorization must be approved by U.S. Department of Interior in Washington, D.C.

STATE CONCESSIONS POLICY. The Parks Division is developing a consistent Statewide policy for concessions. This policy will address vested interest, debt restrictions, renewals, facility ownership, entrance fees, commercial promotion, underground storage tanks, lease rates, transfer of ownership, and commercial expansion.

ROAD MAINTENANCE AND IMPROVEMENTS. Management agencies will continue to emphasize summer road maintenance since that is the season of peak use. Dust abatement efforts will continue as needed to reduce dust on study area roads, and grading and paving will occur as funds allow. If federal funding is received, a road improvement and safety plan and engineering study will be prepared recognizing West Shore Road, the Canyon Ferry Village area, and entry points to recreation sites as high priority locations. Improvements will take place according to this study. Lewis and Clark County is encouraged to cooperate with interested citizens in seeking other sources of funding to pave the unpaved portion of Canyon Ferry Road to the Broadwater County line.

FIRE CONTROL. A fire management plan will be prepared in cooperation with all affected jurisdictions. The plan will address responsibilities for all areas of the reservoir, the means for compensation, actions for coordination, and measures for preventing and controlling fires. The overall policy will be to put fires out as quickly as possible.

LAW ENFORCEMENT. Management agency enforcement personnel for both the land and water should be increased. Law enforcement in the study area is inherently confusing because of the various jurisdictions involved on public and private property, and on the public road system. The respective County Sheriffs' offices and 911 will continue to serve as the initial contact point in case of emergency.

SIGNS. A directional and informational signing system will be developed for the study area. A consistent design and logo will be adopted for use by the management agencies and concessionaires. Directional signing will be increased, especially at the south end of the reservoir

to direct visitors to the WMA. Interpretive signing programs will require research and development by agency experts.

STAFFING. Staffing levels will need to be increased to accomplish the goals, objectives, and policies of this plan. Increased staffing needs have been evaluated by the management agencies and are contingent on funding.

CANYON FERRY LIMNOLOGICAL INSTITUTE (CFLI). The management agencies recognize the educational contribution that CFLI has made to the State. On-going efforts will be made to assist CFLI in securing long-term facilities.

CONTINUED PUBLIC INVOLVEMENT. If an interagency management partnership is invoked at Canyon Ferry, a single staff person will be designated to route public comments and needed permits. The public is concerned that administration of the area will be confusing and accountability and accessibility lost with such a management structure. The Master Advisory Committee will remain in effect after the preparation of this plan is complete to continue public involvement at Canyon Ferry.

DISABLED ACCESSIBILITY. DFWP has adopted a policy plan addressing disabled accessibility. This is entitled "Crossing The Barriers-Disabled Accessibility Self-Evaluation and Transition Plan for the Department of Fish, Wildlife and Parks". This document will serve as the policy plan addressing this issue. National American Disabilities Act standards will be incorporated into all new or modified site design and development.

4.4 IMPLEMENTATION

The following implementation schedule provides guidance for Canyon Ferry management agency(ies) to implement the plan's objectives and to measure the progress and success of the plan. The implementation schedule may be useful to the agency(ies) during annual budgeting processes. Continued involvement by the Master Advisory Committee will also ensure that the objectives are met.

Timely implementation is contingent on sources of funding. As of this writing (December 1992), a funding bill is awaiting congressional approval. If it passes, implementation would be carried out per the schedule. If not, it would be substantially set back. Figures and completion dates provided are estimates only and may be revised depending on management capabilities and funding.

IMPLEMENTATION SCHEDULE

| Objective | Responsibility | Completion Date | Estimated Cost |
|---|---|-----------------|-------------------------|
| 1a. Restrict spills to a maximum of 30 days and 4,000 cfs. | Reclamation | On-going | NA |
| 1b. Maintain minimum Missouri River flows of 4,000 cfs except during low flow years, reduce to minimum 2,800 cfs. | Reclamation | On-going | NA |
| 1c. Maintain seasonal reservoir elevations as specified in the plan. | Reclamation | On-going | NA |
| 1d. Update Missouri River Advisory Council's guidelines and continue meetings. | Initiated by DFWP | On-going | NA |
| 2a. Revise MOU between Reclamation and DFWP. | DFWP/Reclamation | September 1993 | Staff time |
| 2b. Prepare statewide concessions policy. | DFWP, Parks Division | Being drafted | Staff time |
| 2c. Review agency policies to assure compliance with MEPA/NEPA. | Managing agency(ies) | September 1993 | Staff time |
| 2d. Develop interagency sign-off procedure for land use decisions. | Initiated by management agency. USFS, BLM, DFWP, Reclamation | July 1993 | Staff time |
| 2e. Assess adequacy of cabin site lease fees and conduct reappraisal of cabin sites. | Management agency(ies) | 1997 | \$75,000 |
| 2f. Designate a single contact agency to route permitting. | Management agency(ies) | Spring 1994 | Undetermined |
| 2g. Clarify function of the OTT and develop project priority list. | Management agency(ies) | Spring 1994 | Undetermined |
| 2h. Address noise conflicts at noise sensitive bays. | Management agency(ies) | Summer 1993 | Undetermined |
| 2i. Prepare, publicize, and enforce cabin site building standards. | Management agency(ies) | September 1995 | Staff time |
| 3a. Formalize a signing program for the park. | Management agency(ies) | October 1994 | up to \$20,000 |
| 3b. Provide a travel plan of specific information about the area. | Management agency(ies) | October 1995 | \$5,000 |
| 3c. Construct a south-end visitor center with Townsend community. | Management agency(ies) | October 1997 | \$110,000 |
| 3d. Develop, initiate, and publicize interpretive programs | Management agency(ies) | On-going | Staff time |
| 3e. Provide maps and information at the visitors centers. | Management agency(ies) | On-going | Staff time/ \$10,000 |
| 3f. Provide boating regulations and tips. | Management agency(ies) and DFWP through enforcement personnel | On-going | Staff time |

| Objective | Responsibility | Completion Date | Estimated Cost |
|---|--|-------------------|--|
| 4a. Provide adequate funding for capital improvements and O & M to achieve stated objectives. | Management agency(ies) | On-going | at least \$3 million for capital imps. and \$300,000 - \$500,000 O & M |
| 4b. Increase staff to minimum of 14 FTEs; increase enforcement staff. | Management agency(ies) | October 1994 | \$400,000 |
| 4c. Establish a pilot program to promote Canyon Ferry. | Management agency(ies) Chambers-of-Commerce, concessiona | Undetermined | Undetermined |
| 4d. Prepare a 5-year CIP for Canyon Ferry and an update mechanism. | Management agency(ies) | December 1993 | Undetermined |
| 5a. Conduct a communications evaluation of the study area. | Management agency(ies) | Undetermined | Undetermined |
| 5b. Provide additional RV dump stations. | Management agency(ies) | October 1995 | \$30,000 |
| 5c. Provide potable water at Fish, Hawk, Overlook, Goose Bay, Confederate, and Cottonwood. | Management agency(ies) | October 1994 | \$30,000 |
| 5d. Formulate a mosquito control plan prior to pesticide application. | Reclamation | October 1994 | Undetermined |
| 5e. Continue to monitor toxic algae blooms. | DFWP, DHES | On-going | Undetermined |
| 6a. Formulate a Canyon Ferry Village Plan. | Reclamation | Undetermined | Undetermined |
| 6b. Determine the need for future commercial and Canyon Ferry airport expansions. | Reclamation | Spring 1995 | Undetermined |
| 6c. Inventory landscaping needs. | Management agency(ies) | October 1996 | \$40,000 |
| 6d. Provide buffer zones around future recreation sites. | Management agency(ies) | On-going | Undetermined |
| 6e. Work with ORV users to identify ORV use areas on nearby public lands. | Reclamation/Managing agency(ies) | Summer 1994 | NA |
| 6f. Curtail trespass/ unauthorized vehicle use by a combination of methods. | Management agency(ies) | October 1995 | Undetermined |
| 6g. Develop a fire management plan. | Management agency(ies) USFS, BLM | 1994 | Undetermined |
| 7a. Provide additional disabled-access facilities | Management agency(ies) | On-going | As funds allow |
| 7b. Explore mechanisms for upgrading maintenance of East and West Shore roads. | Management agency(ies) and CFRA | Undetermined | Undetermined |
| 7c. Conduct a safety and engineering analysis and improve Canyon Ferry's road system. | Management agency(ies) | October 1994-1998 | \$2,000,000 + |
| 7d. Sign and mark fishing and ice-fishing access points. | Management agency(ies) | October 1994 | Undetermined |
| 8a. Complete an inventory of historic, prehistoric, and paleontological resources. | Reclamation | 1995 | Staff time |
| 8b. Increase surveillance of sites and paleontological locales. | Management agency(ies) | On-going | NA |

| Objective | Responsibility | Completion Date | Estimated Cost |
|---|---|--------------------------|---------------------|
| 8c. Develop compliance procedures so that resources are protected. | Reclamation | 1995 | Undetermined |
| 8d. Comply with existing laws for cultural resources on all new projects. | Management agency(ies) | 1994 | NA |
| 8e. Develop law enforcement procedures for ARPA violations. | Reclamation | Undetermined | Undetermined |
| 8f. Develop interpretive displays for cultural resources. | Management agency(ies) | Undetermined | Undetermined |
| 8g. Develop a cultural resource management plan. | Management agency(cies) | 1996 | Undetermined |
| 9a. Establish a consistent visitation record for Canyon Ferry. | Management agency(ies) | Spring 1993 | Undetermined |
| 10a. Prepare a capacity analysis. | Reclamation | Summer 1994 | Undetermined |
| 10b. Provide interpretive tours. | Management agency(ies) | Undetermined | Undetermined |
| 10c. Expand the variety of recreational experiences. | Management agency(ies) | 1994-1998 | capital development |
| 11a. Physically designate campsites. | Management agency(ies) | 1994-1998 | capital development |
| 11b. Consider soil conditions in future development. | Management agency(ies) | On-going | NA |
| 11c. Continue dust control on area roads. | Management agency(ies) | annual chip/seal by 1998 | chip/seal \$900,000 |
| 11d. Protect sites from wave action. | Management agency(ies) | On-going | Undetermined |
| 12a. Request that DHES-WQB design a water quality monitoring program. | DFWP | December 1994 | Undetermined |
| 12b. Educate area users about the effects of sewage effluent. | Management agency(ies) | On-going | Undetermined |
| 12c. Continue DHES-WQB programs for agricultural operators. | DHES at request of Management agency(ies) | On-going | Undetermined |
| 12d. Evaluate and replace wells at some recreation sites. | Management agency(cies) | 1998 | \$30,000 |
| 13a. Implement 1992 Wildlife Plan and monitor progress. | Management agency(ies), DFWP | On-going | NA |
| 13b. Conduct vegetation and wildlife inventories when considering development. Coordinate with USFWS. | Management agency(ies) | On-going | NA |
| 13c. Prepare a weed management plan. | Reclamation, CFRA, DFWP, and concessionaires. | 1993 | Undetermined |
| 13d. Identify and protect critical wildlife habitat. | DFWP and Management agency(ies) | On-going | Undetermined |
| 13e. Protect wildlife habitat on adjacent lands through cooperative agreements. | DFWP-Wildlife Division | On-going | Undetermined |
| 13f. Conduct periodic raptor surveys. | DFWP | On-going | Staff time |

| Objective | Responsibility | Completion Date | Estimated Cost |
|---|------------------------------|--------------------------------------|---|
| 13g. Officially designate additional wildlife management areas. | DFWP-Wildlife Division | Fall 1995 | Staff time and Commission hearing |
| 13h. Enhance wildlife habitat. | DFWP, Management agency(ies) | Undetermined | Undetermined |
| 14a. Implement 1992 Fisheries Plan and monitor progress. | DFWP | On-going | Staff time and capital costs - \$295,000 annually |
| 14b. Enhance and stabilize trout population. | DFWP | On-going | Portion of 14a. |
| 14c. Enhance the brown trout population. | DFWP | On-going | Portion of 14a. |
| 14d. Obtain a better understanding of yellow perch population. | DFWP | On-going | Portion of 14a. |
| 14e. Prevent illegal fish introductions. | DFWP | On-going | Portion of 14a. |
| 14f. Continue protecting important fish habitat. | DFWP | On-going | Portion of 14a. |
| 14g. Continue to address impacts on the fishery through the Missouri River Advisory Council. | DFWP | On-going | Portion of 14a. |
| 14h. Continue to identify and protect critical habitats as data are gathered. | DFWP | On-going | Portion of 14a. |
| 15a. Use localized weather data in facilities planning. | Management agency(ies) | On-going | NA |
| 15b. Locate additional weather stations to provide early warning systems. | Management agency(ies) | Undetermined | Undetermined |
| 16a. Develop and implement visual standards for all structural improvements. | Management agency(ies) | development ? enforcement - on-going | Undetermined |
| 16b. Management agencies will participate in timber harvest planning with Helena National Forest. | Management agency(ies) | On-going | NA |
| 16c. Provide screening and buffers around and within recreation sites. | Management agency(ies) | 1994-1998 | Undetermined |

4.5 UPDATING AND AMENDMENT

The Canyon Ferry Resource Management Plan has been prepared for a ten-year time frame. However, it is recognized that an internal review would be beneficial on an annual basis to reflect changing conditions. In ten years, complete update and amendment of this plan should occur.

APPENDIX A

Management History

MANAGEMENT HISTORY

The following discussion was developed, in large part, by Don Hyypa, Special Assistant for Outdoor Recreation, in a DFWP position paper dated January 23, 1991. It explains the tenuous management situation that Canyon Ferry has been under since 1988 and the reasons for possible termination of DFWP management.

In 1988, DFWP proposed relinquishing management of Canyon Ferry for financial reasons. This was done as part of its budget proposal for the 1989 legislature. It was precipitated by budget office instructions that mandated further cuts in an already austere budget. DFWP concluded that it could no longer afford to manage this federal project in light of the fact that it was unable to afford proper management of state-owned parks for which it had sole responsibility.

Meanwhile, because the proposed relinquishment was very controversial, public meetings were held in the fall of 1988 and the matter was debated in the 1989 legislature. A special legislative subcommittee was appointed to thoroughly study the issue.

In response, Reclamation took offers from both the BLM and USFS who were anxious to step in as managing agencies. Both agencies had national recreation initiatives underway and recognized Canyon Ferry's tremendous recreational potential. BLM was given preference because it is Reclamation's sister agency in the U.S. Department of Interior, and because a less complicated transition of management would be involved. Negotiations proceeded to the stage of a draft agreement between Reclamation and BLM and were then halted.

The legislative subcommittee's work had led to a series of negotiations among legislators, lobbyists and the agencies. These negotiations established the basis for a 1989 MOU, temporarily extending DFWP management through September 30, 1993. The MOU's purpose was to keep DFWP's options open while looking for the best long-term solution. The strategy was to make limited, but meaningful and immediate improvements as a demonstration of good faith. This would "buy time" to develop a comprehensive long-range management plan for Canyon Ferry and to permanently solve the parks funding problems.

Reclamation agreed to the extension in recognition of its policy favoring local management, and to give the legislature the four years it requested to find funding solutions and to determine if Montana could afford to make the necessary investment in development and management of Canyon Ferry. The extension of approval was conditional upon an immediate upgrade in management and maintenance and a substantial infusion of capital into the park.

The 1989 legislature subsequently endorsed charging entrance fees, approved new personnel hiring, and augmented maintenance operations funding from new fee earnings. It restored other programs in an effort to help Canyon Ferry and the rest of the state park system, including approving the creation of the State Park Futures Committee. It was clear that the legislature expected to revisit these issues again in 1991, with the Parks Futures Committee Report, and in 1993 with this plan.

In the aftermath of the 1989 legislative session, DFWP felt that substantial progress had been made towards a solution to Canyon Ferry funding. Much of this optimism was based on the assumption that entrance fees would generate adequate revenue to cover costs of operation. The fee earnings, however, met half their projected level, leaving DFWP unable to meet their commitments without an infusion of money from other park system budgets.

The State Park Futures Committee, in its report to Governor Stephens and the 52nd Legislature recommended Canyon Ferry as a model site for the state park system because of its "tremendous immediate potential". But without adequate funding, Canyon Ferry is seen by DFWP as a burden that it will not be able to carry one that will rob the rest of the system.

DFWP believes that this situation must be permanently addressed, either by revenue sources approved by the legislature, by changes in federal authorizations, by significant increases in cabin site and other fees, or a combination of these.

If financial relief is not forthcoming, it will be DFWP's recommendation that management of Canyon Ferry be returned to Reclamation July 1, 1993.

When, in 1988, a transfer of management was being considered by Reclamation and DFWP, both the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) conducted individual on-site reconnaissances of Canyon Ferry Recreation Area as they considered possible management by their respective agencies. Each agency produced general management projections and costs, summaries of which are discussed below.

BLM

The BLM contemplated start-up costs, including operations and maintenance and capital costs totaling \$1.5 million. An annual \$450,000 operations and maintenance budget (1989 dollars) was anticipated, including \$300,000 in labor costs. It was assumed that under BLM management the DFWP would continue their financial commitment to the Wildlife Management Area (WMA) at the south end of the lake with supplemental funding from BLM, that the Fisheries Division would continue fisheries management, and the Enforcement Division would continue to monitor water safety. It was also assumed that Reclamation would continue to maintain the canal and dike system for the WMA.

Start-up costs included extensive recreation facility replacement, equipment purchase, sign replacement, dump stations, office rental, and a relocation of White Earth's access road, and testing of five significant prehistoric sites.

USFS

The USFS interdisciplinary team projected capital costs necessary to bring the area up to USFS standards at \$8,795,000 over five years. Annual operations and maintenance budgets were projected at \$730,000 (1989 dollars).

TABLE 1
Comparison of Projected and Actual Expenditures
DFWP, BLM, USFS
for FY 1990

| Agency | Operations & Maintenance | Capital Expenditures | Other |
|------------------|--|---|--|
| BLM (projected) | \$450,000 projected annual O & M costs \$300,000 personnel costs | \$917,500 included new toilets, picnic tables, fire rings, and other recreation facilities | \$66,000 office rent \$30,000 resource studies |
| USFS (projected) | \$730,000 projected annual O & M costs Personnel costs estimated to be \$425,000 (Gray, 1991) | \$8,795,000 program over five years. \$1,759,000 annually. Included extensive campground improvements, road paving, beach and fishing access improvements, dump stations, signs, trails and walkways | |
| DFWP (actual) | \$266,628 Personnel \$116,746 | \$15,189 included work on latrines and boat docks | \$130,000 management plan to be spent over three years |

Source: Telephone conversations with, and unpublished file notes from Gordon Gray, Helena National Forest, USFS. Gary Gerth, Butte District office, BLM. January, 1991.
DFWP SBAS data, 1990.

1) See Parks Division Funding, Socioeconomics, for a further discussion of DFWP funding commitments.

Capital expenditures included extensive campground site improvements, beach and fishing access site improvements, dump stations, signs, trails, and walkways. In addition to the capital expenditures, it was assumed that substantial engineering fees would be spent bringing West Shore Road up to safety standards (Gordon Gray, Helena National Forest, personal communication, 1/22/91). It was assumed that DFWP would continue their management of fisheries, wildlife and the WMA. Reclamation was to continue operation of the dike and canal system for the WMA, and boating and safety management and enforcement would have been conducted by DFWP.

If any agency other than the DFWP assumed management, policy directives could be different than those presently in effect. Further, depending on the agency, and form of transfer (management agreement vs administrative transfer) extensive bureaucratic involvement might have to take place, including possible Congressional and/or executive approval.

Another option that was considered by the USFS was to seek designation of Canyon Ferry as a National Recreation Area. This would have gained the area more notoriety while also giving it a special management status with potentially better access to funding.

In February, 1991, an effort to create a three-way partnership between Reclamation, BLM and DFWP was initiated. The purpose of the partnership was to provide increased capital development and management of Canyon Ferry State Park.

A memorandum of understanding between the agencies was completed in the summer of 1992 and legislation was introduced in Congress to provide changes necessary to allow additional recreational expenditures at federally-built reservoirs. This legislation passed and was signed by President Bush. Additional legislation authorizing expenditures for capital development by BLM will be introduced in the current (1993) session of Congress.

APPENDIX B

Public Involvement Plan

**CANYON FERRY RESOURCE MANAGEMENT PLAN
PUBLIC INVOLVEMENT PROGRAM SUMMARY REPORT**

1.0 SUMMARY OF THE PROGRAM AND PROCESS

1.1 Introduction

The Public Involvement Program for the Canyon Ferry Resource Management Plan (RMP) consisted of a number of components, including a master advisory committee, news releases, special meetings and public meetings. Each of these components was designed with the intention of obtaining public input to key phases of the RMP process. Important input was obtained in a) defining the issues which the RMP must address, b) identifying the goals and objectives for the plan, c) developing the alternatives to accomplish the goals and objectives, and d) deciding upon a preferred alternative. The overall Public Involvement Plan also served as the scoping effort required by the National Environmental Policy Act (NEPA), the Montana Environmental Policy Act (MEPA) and HB 495 (Montana Parks Improvement Policy).

The Department of Fish, Wildlife & Parks (DFWP) Master Advisory Committee (MAC) was comprised of representatives from the sponsoring governmental agencies, local government, and major interest groups. Through frequent meetings, the MAC was involved in all aspects of the RMP development and directly participated in decision making throughout the planning process.

News releases were made at specific points in the development of the RMP. They advised the public at large as to the status of the RMP, informed the public as to how to provide input, and notified the public of upcoming special and public meetings concerning the RMP.

Special and public meetings were held at strategic points in the development of the RMP. Special meetings were held to deal with localized issues. Public meetings were held in four local communities which provide a large portion of public recreational users. Public meetings were held during the scoping of issues, consideration of RMP alternatives, and review of the draft RMP.

Each of the components of the Public Involvement Program are described in greater detail in the following paragraphs.

1.2 Master Advisory Committee

In 1986, the Lewis and Clark County Commission formed a steering committee to try and address interagency management concerns at Canyon Ferry. This local steering committee was made up of representatives from the Lewis and Clark County Commission, Broadwater County Commission, Canyon Ferry Recreation Association, Townsend Chamber of Commerce, Helena Chamber of Commerce, Bureau of Land Management, U. S. Forest Service, and an at-large public member. The Bureau of Reclamation (Reclamation) and DFWP worked closely with this steering committee until the decision was made to prepare a RMP. The concept of such a plan was thoroughly discussed and reviewed with this committee as were the public involvement needs of such a planning effort.

Once the decision was made to prepare a RMP, a formal Public Involvement Program was required. The original steering committee was expanded to include additional members of the public, special interest groups, and governmental agencies. The composition of the committee was designed to include representatives from all key interest groups at Canyon Ferry. The committee was renamed the DFWP Master Advisory Committee (MAC) and has served in an advisory capacity, functioning as a sounding board as the study progressed.

In its final form, the MAC was comprised of individuals from the following agencies and interest groups. The names of the individual group members are listed in Attachment #1, attached.

- Lewis and Clark County Commission
- Broadwater County Commission
- Helena Chamber of Commerce
- Townsend Chamber of Commerce
- Canyon Ferry Recreation Association
- Canyon Ferry Concessionaires
- Trout Unlimited
- Good Sam's
- Walleyes Unlimited
- Ducks Unlimited
- Local Sportsmen's Clubs
- Members of the Public at Large
- Local State Legislators
- Bureau of Reclamation
- Bureau of Land Management
- Department of Fish, Wildlife & Parks

The MAC met a total of twelve times during the planning process. MAC was called upon to address all aspects of the RMP as it was developed. Brief overviews of the main agenda items from each meeting are listed below.

Meeting 1 - June 12, 1990

- Overview of the planning program
- Composition of the committee
- Scheduling of a field tour

Meeting 2 - August 15, 1990

- Day-long field tour at Canyon Ferry

Meeting 3 - December 11, 1990

- Review RMP work program and timetable
- Discuss DFWP studies (Fisheries & Wildlife)
- Scheduling and format for public scoping meetings

Meeting 4 - April 24, 1991

- Report on progress of baseline studies
- Review of input from public scoping meetings
- Report on current recreation area funding
- Report on visitation and economic impact

Meeting 5 - December 11, 1991

- Report on revision of work program & resulting changes to RMP timetable
- Distribution and discussion of draft of Chapters 1 & 2 (Introduction & Existing Environment)
- Discussion of MAC role and representation

Meeting 6 - January 15, 1992

- Review of MAC input on Chapters 1 & 2
- Preliminary discussion of Chapter 3 (Needs, Planning Constraints & Opportunities)

Meeting 7 - February 26, 1992

- Review of MAC input on Chapter 3
- Preliminary discussion of Chapter 4 (Goals and Objectives, Alternatives)
- Review of RMP timetable

Meeting 8 - June 4, 1992

- Review of second draft of Chapter 3
- Review of recreation sites conceptual plans

Meeting 9 - July 30, 1992

- Review of Chapter 4 (Goals & Objectives)
- Discussion of RMP Alternatives
- Schedule and format for public meetings on RMP Alternatives

Meeting 10 - November 5, 1992

- Review of public input from public meetings on RMP Alternatives
- Review and discussion of revised Chapter 4 (Proposed RMP)

Meeting 11 - February 17, 1993

- Review of draft RMP

Meeting 12 - (Forthcoming)

- Review of public input on RMP

1.3 News Releases

News releases were issued periodically to update the public on the progress of the planning effort, to inform the public of ways of participating or contributing in the process, and to announce public meetings at key stages in the development of the RMP. Releases were sent to area newspapers in the following communities; Helena, Townsend, Butte, Bozeman, Great Falls, Billings, Livingston and Missoula. Releases were made to announce the public scoping meetings held in February, 1991, the special meeting in Townsend concerning Silos development in April 1992, the public meetings on RMP Alternatives in September, 1992, and public meetings on the draft RMP in _____, 1993.

1.4 Special and Public Meetings.

Three sets of evening public meetings were held during the RMP process. Each set included four meetings which were conducted in Helena, Townsend, Butte and Bozeman. These meetings were timed and structured to obtain public input at key points in the RMP process as indicated below.

Public Meetings - Set 1

These meetings were held in February, 1991, and were identified as public scoping meetings. A questionnaire was used to assist in identifying specific issues which the RMP should address. A copy of the questionnaire is contained in Attachment #2 as is a summary of responses to the questionnaire. An issues statement which resulted from the questionnaire is contained in Attachment #3.

Public Meetings - Set 2

These meetings were held in September 1992, and were identified as RMP Alternatives meetings. A response form was used to allow individuals to indicate their preference in Alternatives. A copy of the response form and a summary of responses is contained in Attachment #4.

Public Meetings - Set 3

These meetings were held in _____, 1993, and were identified as draft RMP meetings. Attachment #5 contains the news release concerning these meetings and Attachment #6 contains a summary of the input received at these meetings.

Special Meetings

In April, 1992, two special meetings were held in the Townsend area to address localized issues. The first was a luncheon meeting with the Broadwater County Commissioners, representatives of the Town of Townsend, the local chamber of commerce, and other local officials to specifically discuss the RMP as it pertained to the south end of Canyon Ferry. The second was an evening meeting attended by the general public and addressed more specifically the future plans as regards the Silos area, the Wildlife Management Area, and a visitor center at the south end of the reservoir.

2.0 Evaluation and Recommendations

(Forthcoming following the draft RMP review process and preparation of the final RMP.)

APPENDIX B

ATTACHMENTS:

1. MAC Membership
2. Scoping Questionnaire and Summary of Responses
3. List of Issues
4. RMP Alternatives Response Form and Summary of Responses
5. News Release on Draft RMP (Forthcoming)
6. Draft RMP Response Summary (Forthcoming)

ATTACHMENT 1. Master Advisory Committee Members

Lewis & Clark County Commission
Broadwater County Commission
Helena Chamber of Commerce
Townsend Chamber of Commerce
Canyon Ferry Recreation Assoc.

Canyon Ferry Concessionaires
Trout Unlimited

Good Sam's
Walleyes Unlimited & Prickly
Sportsmen
Ducks Unlimited & Broadwater
Gun Club
Public At Large

Legislators

Bureau of Reclamation

Bureau of Land Management
Dept. of Fish, Wildlife & Parks

RMP Consultants

Linda Stoll-Anderson
Jim Hohn (Previously Ray Doig)
David Hemion
Charlene Grover
Elizabeth Roeth
(Previously Steve Turkiewicz & Don Johnson)
Jerry Reller
David Cole
(Previously Hal Price)
Chuck Lindell

Fred Easy

W. L. "Ollie" Olson
Bud Smith
Dr. Charles Buehler
Rep. Ed Grady
Rep. Jim Rice
Sen. Francis Koehnke
Rick Blaskovich
Pete Schendel
Brad Rixford
Jerry Wells
Patrick Gubbins
Tom Carlsen
Mark Lere
Lisa Bay
Joel Shouse

ATTACHMENT 2. Scoping Questionnaire and Summary of Responses

CANYON FERRY RECREATION/RESOURCE PLAN

QUESTIONNAIRE (Use the back if you need more space)

1. What types of recreational uses do you enjoy at Canyon Ferry?

2. How many days a year to you recreate for each use listed?

3. What issues are of most concern to you at Canyon Ferry?

4. Do you have other issues which have not been identified?

5. What are your desires about future management and facilities?

Name and Address (Optional) _____

CANYON FERRY RECREATION/RESOURCE PLAN
SUMMARY OF QUESTIONNAIRES FROM PUBLIC SCOPING MEETINGS

Public Scoping Meetings were held as follows:

February 6, 1991; Silos Inn near Townsend; 50 people present.
February 7, 1991; Colonial Inn in Helena; 20 people present.
February 13, 1991; Townhouse Inn in Butte; 45 people present.
February 14, 1991; Department Headquarters in Bozeman, 22 people present.

The meetings were advertised in news articles in local and regional newspapers and notices were sent to members of the Department's Master Advisory Committee.

Questionnaire results are summarized by question on the following pages.

Question #1: What types of recreational uses do you enjoy at Canyon Ferry:

Townsend - 25 Responses

Boating - 7
Fishing - 23
Water Skiing - 4
Picnics - 4
Swimming - 6
Camping - 7
Bird & Wildlife Watching - 3
Waterfowl Hunting - 12
Hiking - 3
Asparagus & Mushroom Picking - 1
Trapping - 1
Deer Hunting - 7
Upland Bird Hunting - 9
Ice Skating - 1
Dog Training - 1
Ice Boating - 2
Antelope Hunting - 1

Helena - 12 Responses

Fishing - 8
Boating - 5
Picnic - 3
Swimming - 5
Waterskiing - 7
Scenery - 1
Wildlife - 1
Sailing - 1

Helena (Continued)

Hiking - 1
Summer Activities - 1
Hunting - 1
Camping - 2
Nude Sunbathing - 1
Bird Watching -1
Waterfowl Hunting - 1
Deer Hunting - 1
Cabin Sites - 2

Butte - 26 Responses

Cabin Site Leases - 4
Water Ski - 9
Sail - 1
Boating - 13
Fishing - 21
Swimming - 4
Deer Hunting - 1
Ice Fishing - 2
4 Wheeling - 1
Camping - 11
Jet Ski - 2
Picnic - 1
Hiking - 1
Wildlife Observation - 1

Bozeman - 16 Responses

Boating - 10
Water Skiing - 2
Boat Camping - 1
Fishing - 16
Ice Fishing - 5
Swimming - 2
Camping - 12
Hunting - 2
Bird Watching - 1
Waterfowl Hunting - 1

Question #2: How many days a year do you recreate for each use listed:

Townsend - 25 Responses

3
90
-
30
7
-
-
103
58
20
33
73
60
100
40
20
100
40
23
40
50
50
20
25
100

1,085 days by 22 people or an average of 49 days per year each

470 days fishing
200 hunting
90 camping
60 bird watching
50 boating
40 ice boating
14 photography

Helena - 12 Responses

8
-
200
60
-
100
25

Helena (Continued)

12

140

20

100

150

815 days by 10 people or an average of 82 days per year each

275 days water sport related

162 run/hike

129 fish

110 camp

110 boat

Butte - 26 Responses

56

40

100

90

40

30

40

30

30

40

48

45

40

-

60

60

30

100

30

20

30

30

90

15

40

12

1146 days by 25 people or an average of 46 days per year each

500 days fishing

305 water sport

240 camping

176 cabins

Bozeman - 16 Responses

14

12

40

50

17

10

30

24

30

10

100

20

10

100

45

16

528 days by 16 people or an average of 33 days per year each

313 days fishing

149 camping

53 boating

8 hunting

Question #3: What issues are of most concern to you at Canyon Ferry?

Townsend - 25 Responses

Fishing, Trout - 3

Camping - 1

Fishing, Perch - 1

Waterfowl Hunting - 3

Fishing - 12

Boating Facilities - 1

Hunter Safety at South End - 1

Water Levels - 3

Mosquitos - 2

Fishing, Browns - 1

Water Quality - 2

Recreation Sites & Facilities - 5

Users Pay Their Way - 1

Adequate Funding - 1

Fishing, Walleyes - 2

Upland Bird Hunting - 1

Deer Hunting - 1

Helena - 12 Responses

Fishery - 6
Cabin Leases - 4
More Cabin Leases - 1
Water Level - 3
Cabin Site Purchase - 1
Road Maintenance - 1
Weed Control - 2
Lengthened Camping Stay in Off Season - 1
Wildlife Habitat - 2
Science Training Facility - 2
Enhanced Recreation Facilities - 3
Develop Public Information Areas - 3
Handicapped Facilities - 1
Uncontrolled ORV's - 1
Unofficial Roads - 1
Uncontrolled Long Term Camping - 2
Nature Trails - 1
Reasonable Covenants (cabin sites) - 1
Police & Fire Protection - 1
Improved Road Maintenance - 1
Foot Dragging by DFWP - 1

Butte - 26 Responses

Cabin Sites - 6
Fishery - 17
Lake Level - 10
Weeds - 1
Fees - 4
Maintenance - 3
State/Fed Management - 1
Funding - 2
More Cabin Sites - 1
Dump Stations - 2
Fire & Police Protection - 2
Water Quality - 1
Control ORV's - 1
Control High Powered Boats - 1
Better Roads - 2
More Boat Ramps - 1
Camping Facilities - 2
Fish Cleaning Stations - 1
More Access - 1

Bozeman - 16 Responses

Boat Ramps - 4
Trout Fishing - 3
Water Level - 5
Fishing - 12
Camping - 3
Improve Roads - 1
Eyesores - 1
Enforcement - 1
Fees - 1

Question #4: Do you have other issues which have not been identified?

Townsend - 25 Responses

Water Ski Jump -1
Road Paving - 1
Fees For All Uses - 1
Agriculture - 1
Outfitting - 1
Stream Flow Above Lake - 2
Purchase of Private Lands - 1
Develop Water Based Facilities - 1
Irrigation - 1
Flood Control - 1
Commercial Leases at South End - 1
Bird Viewing Walking Trails - 1
Dog Field Trial Area - 1
Water Levels - 1
Fees Cut Use - 1
Economic Ramifications of Plan - 2
Electric Power to Campsites - 1
Access - 1
Mosquitos - 1

Helena - 12 Responses

Unrealized Recreation Potential (Walleyes) - 1
Fire Station on West Shore - 1
Dead Trees on West Shore - 1
Longterm Camping in Off-season - 1
State Magnet School - 2
Improve Boat Launching - 1
Bike Trails - 1
Walk-in Areas - 1
Improved Campgrounds - 1
Give Camping To Feds - 1

Helena (Continued)

Weed Control - 1
More Cabin Sites - 1
Prefer State Management - 1

Butte - 26 Responses

More Camping Facilities - 1
Fees - 2
Police & Fire Protection - 1
Open West Shore Camps - 2
Walleyes - 1
Road Conditions - 1
Dump Stations - 1
Magpie Bay Boat Ramp - 1
Federal Management - 1

Bozeman - 16 Responses

Cattle on West Shore - 1
Signing - 1
More Boat Ramps South End - 1
Noise, Motor Bikes - 1
Rough Fish - 1

Question #5: What are your desires about future management and facilities?

Townsend - 25 Responses

No Frills - 2
Shade Trees - 1
Improve Fishing - 5
 w/Trout - 2
 w/Walleye - 4
Local Management - 1
Emphasis on Water Recreation Facilities - 1
More Recreation Facilities - 1
Fed/State Split of Management - 1
Waterfowl Improvement - 1
Privatize Facilities - 1
Annual Park Fee - 1
Economic Impact - 1
Improved Recreational Opportunities - 1
No Consultants - 1
Wild Lands - 1
Brown Trout in River - 1

Helena - 12 Responses

Continue as State Park - 3
Continued Improvement of Facilities - 4
Better Advertising, Public Information - 1
Longterm Camping - 1
Enhance Public Use - 1
Fishing Improvement - 1
Magnet School - 1
Trout Fishing Improvement - 1
More Interest By DFWP - 1

Butte - 26 Responses

Federal Management - 3
Sell Cabin Sites - 3
Re-establish Trout - 4
Additional Campgrounds South End - 1
Improve Fishing - 6
Improve Camping - 5
Enforce Covenants - 1
Proper Road Maintenance - 1
Water Level Stabilization - 2
Swimmer Safety Plan - 1
More Cabin Sites - 1
More Dump Stations - 1
No Drinking Parties - 1
Enforcement - 1
Local Management - 2
Fair User Fees - 3

Bozeman - 16 Responses

Low Impact Development - 2
South End Development - 1
Walleyes - 1
Better Fishing (any kind) - 7
White Earth Access Road - 1
Improve Facilities - 2
Boat Ramp Duck Creek - 1
Improve Parking at Dam - 1
Close Unofficial Roads - 1
Radio Communications for Emergencies - 1

Miscellaneous Comments -

Townsend -

Missouri River Needs to be included in Fishery Study (Browns).
Bring it in, pack it out policy on garbage.
Those who use it pay for it.
Leave the north end under FWP, give south end to Feds.
Do not need fancy campgrounds.
Keep up the good work on the silos area.
Silent majority does not have a problem with fees if improvements are made.
Facilities are getting much better.
Water level needs to be below 95 to eliminate mosquitos.
Not enough emphasis on economic issues.

Helena -

Is agricultural spraying affecting the fishery.
Is arsenic a factor in the fishery.
Courtesy light at Riverside would help.
Develop this park as a premier facility and provide security and commercial quality campgrounds.
Improve campgrounds, but no Disneyland.
Management would be more accessible if fisheries and wildlife were also managed out of Region 8.

Butte -

Day use fee and camping fee should be combined. People are being pestered by fee collectors, some of who are rude. Use Wyoming's system.
Needs to be distinction between entrance fees and user fees.
How is Department going to fund the \$9 million in deferred maintenance.
Ag runoff is major polluter.
Portions of lake are under-utilized while north end is crowded.
Get people from Butte, Bozeman & Great Falls on Advisory Committee.
Looks like no fish left in lake, 9 trips and no fish.
State is spending too much \$ on camping and amateur biologists.
Don't complicate, I'm there to relax, no fancy facilities or flush toilets.

Bozeman -

Isn't a 10 fish limit unrealistic.
Look at Idaho fee policy.
Need radio communications for safety.
Need a boat ramp on east shore.
Need increased parking near dam to watch eagles & osprey.
Went fishing many times last fall, not even a strike.

ATTACHMENT 3.

List of Issues

1. Reservoir Operations & Impacts On:
 - a) Recreation
 - b) Power Generation
 - c) Fishery
 - d) Wildlife
2. Commercial Uses - Existing & Future
3. Cabin Site Leases - Existing and Future
4. Health Considerations - Water, Sewage & Solid Waste
5. Roads - Needs, Maintenance, Off Road Vehicles (ORV's), Access, & Unofficial Proliferation
6. Service Provisions
7. Police & Fire Protection
8. Resource Considerations
 - a) Fisheries
 - b) Wildlife
 - c) Raptors
 - d) Water Quality
 - e) Noxious Weeds
 - f) Noise
 - g) Visual
9. Recreation Uses
 - a) Boating
 - b) Fishing
 - c) Hunting
 - d) Swimming
 - e) Scuba Diving
 - f) Float Plane Use
 - g) Windsurfing
 - h) Ice Boating
 - i) Jet Ski
 - j) Handicapped Facilities
 - k) Future Needs

10. Management
 - a) User Fees
 - b) Economic Development/Revenue Generation
 - c) Financial Impacts on Area Communities
 - d) Marketing of the Recreation Area
 - e) Consolidating Management
 - f) Future Management
 - g) Funding for Future Facilities

ATTACHMENT 4.

Meeting Response Form

NAME_____ADDRESS_____

1. Do you feel the range of Alternatives presented are adequate or do you feel they should be changed, and how?

There were 37 total responses as follows:

Adequate - 8 responses

Not Adequate - 2 responses

Alternative A - 15 responses

Alternative B - 2 responses

Alternative C - 2 responses

Alternative D - 2 responses

No Opinion - 6 responses

37 total responses

2. Do you have any other comments which you wish to make at this point regarding the Canyon Ferry Resource Management Plan?

The following comments were noted:

Townsend

maintain primitive, invest few dollars

Bozeman

fish limits

public use is down, will return by upgrading existing facilities

road improvements, no facilities to increase public use on west shore due to problems of vandalism

yes to hiking trails, no visitor centers & signs, free access areas

Butte

don't like fee system & amount of fees, feds manage campsites

don't change Jo Bonner to group use area

higher lake levels

sell cabin sites to raise \$, compliments to DFWP efforts on communications

make upper Chinamen's a group use area

Helena

agree with further development at south end, don't forget \$

impacts of cabin site leases
noise sensitive areas important, problems of loose dogs
stabilize water levels, sell cabin sites
open east shore camping, assist concessionaires, cleaner
facilities, more policing, liberalize rules
don't reinvent the wheel, expand the existing direction of
development
save the science camp (CFLI)
more development at the Silos
like hiking trails, deal with knapweed
more \$ for projects
more weed control
resolve cabin site issue, improve roads
sell cabin sites
Jo Bonner good group use site
publicize make-up of the Advisory Committee
fishing and hunting are not the only ways to recreate
boat hazard markers
public use down due to fees, no fish, low water, equal funding for both ends of the lake
noise bad, better roads needed
tremendous potential for increased use
improve fishing

ATTACHMENT 5.

News Release on Draft RMP (Forthcoming)

ATTACHMENT 6.

Draft RMP Response Summary (Forthcoming)

APPENDIX C

Socioeconomic Calculations

ASSUMPTIONS USED FOR WORKSHEETS:

- 1) The percentage of nonlocal nonresident park use was based on 1989 fee envelope data and an MPC recreation survey taken at Riverside. Nonresident use was separated from nonlocal because trip expenditures were different between the two groups.
- 2) Total visitor days were based on 1989 DNRC survey, with nonresident visitation adjusted upward to 25 percent of resident total. DFWP total angler days for 1990 were estimated to be 98,000. This is the primary use at Canyon Ferry based on visitor surveys and public meeting input. Even if other activities equalled fishing visitor use, total use would appear to be around 196,000 in 1990.
- 3) From: University of Montana, Bureau of Business and Economic Research, Survey of Resident and Nonresident Park Visitors, 1988.
- 4) The average multiplier is 2.0. Smaller, more isolated areas generally have lower multipliers. For that reason, and in an attempt to be conservative in estimating economic benefits, the 1.6 multiplier was used.
- 5) MONTANA RESIDENT SALES IMPACT ON THE LOCAL ECONOMY

To calculate tourism impact from beyond the immediate impact area of Lewis and Clark and Broadwater counties, but from other Montana residents, visitation from these two counties (23.4 percent) was subtracted out.

| | |
|---------------------------------------|--------------------------|
| Nonlocal resident percent of park use | 51.6% |
| Total recreation visitor days | 205,878 X .516 = 106,233 |
| Average daily resident expenditures | \$7.90 |
| Calculate direct sales | \$839,241 |
| Enter indirect multiplier | 1.6 |
| Total benefits from resident sales | \$1,342,785 |
| Plus total nonresident sales | \$1,836,206 |
| GRAND TOTAL SALES | \$3,178,991 |

- 5a) This figure does not include resident sales since these do not bring in additional tax revenues from out-of-state.
- 6) Used the average figure of 0.3 from the model since this was unknown.

7) The state income tax percentage is based on an average of all personal income tax categories for 1989. (Phil Brooks, Montana Department of Revenue, personal communication, 4/18/91.)

8) Used the average multiplier from the model.

9) Federal salaries (1991) include \$46,050 in local land and water management personnel, and \$59,000 in administrative costs at Reclamation's Montana Projects Office in Billings. It is estimated that an additional \$10,000 per year is spent on weed control and maintenance of Canyon Ferry (Pete Schendel, pers. comm., 4/20/91).

10) Use same multiplier as for 4.

11) Includes Parks Division salaries and operations budgets from state CBAS data. Enforcement salaries and operations figures were provided by Jerry Wells, Region 8 Director. Wildlife and fisheries figures were provided by Bruce Rehwinkel, Fisheries Biologist. For stocking fish in the reservoir, an average annual figure of \$175,000 was used provided by Bruce Rehwinkel. The total figure is low in that it does not account for improvements made by concessionaires for 1989.

12) STATEWIDE SALES IMPACT

Nonresident park visitation was assumed to be 25 percent of the total, or 51,695 visits. In order to convert this to the total number of trips (so that the multiplier on Table 3 could be used, \$47.80), this figure was divided by 2.4. The Montana State Park System Visitor Study (page 27) found that this was the average nonresident length-of-stay at state parks. Therefore, statewide sales impacts were calculated as follows:

Sales:

$$\begin{aligned}
 51,695 \text{ nonresident visits} &\times 2.4 &= 21,540 \text{ trips} \\
 21,540 \text{ trips} &\times \$47.80 &= \$1,029,612 \text{ total sales} \\
 \$1,029,612 &\times 1.6 \text{ indirect multiplier} &= \$1,647,379 \\
 \text{TOTAL SALES BENEFITS} &&= \$1,647,379
 \end{aligned}$$

Tax Benefits:

$$\begin{aligned}
 \$1,647,379 &\times \text{taxable income ratio } .3 &= \$494,213 \\
 \$494,213 &\times \text{income tax rate } 0.6 &= \$29,653 \\
 \text{TOTAL TAX BENEFITS} &&= \$29,653
 \end{aligned}$$

Job Benefits:

| | |
|------------------------------------|-----|
| Total sales benefits in millions | 1.6 |
| Jobs created per million in sales | 30 |
| TOTAL JOB BENEFITS ELSEWHERE IN MT | 48 |

APPENDIX C

WORKSHEET #1 ECONOMIC BENEFITS RESULTING FROM PARK VISITOR EXPENDITURES

A. SALES BENEFITS FROM TOURISM: Dollar value of goods and services purchased in the local area.

1. Enter the estimated NON-LOCAL ^{NON-RESIDENT} PERCENT of park use. .25 ⁽¹⁾
2. Look up the annual RECREATION VISITOR-DAY volume.
(From annual NPS Statistical Abstract) 205,878 X .25 =
51,695 ⁽²⁾
3. Enter the average daily ^{NON-RESIDENT} EXPENDITURES PER PERSON.
(May use AAA data from Appendix A if other information is not available) \$22.20 ⁽³⁾
4. Calculate DIRECT SALES. (1) x (2) x (3) \$1,147,629
5. Enter the estimated INDIRECT & INDUCED SALES MULTIPLIER.
(Range is 1.2 - 2.8; avg = 2.0) 1.6 ⁽⁴⁾
6. Calculate TOTAL SALES BENEFITS FROM <sup>NON-RESIDENT AND
NON-LOCAL</sup> TOURISM. (4) x (5) \$1,836,206 ⁽⁵⁾
1,342,785
\$3,178,991

B. TAX REVENUE BENEFITS FROM TOURISM

1. Enter TOTAL SALES from A.6 above. N/A
2. Enter COMBINED STATE & LOCAL RETAIL SALES TAX RATE. N/A
3. Calculate INCREASED SALES TAX REVENUES. (1) x (2) N/A
4. Enter TOTAL SALES from A.6 above. \$1,836,206 ^(5a)
5. Enter the TAXABLE INCOME RATIO (i.e., taxable portion of salaries & business profits: range is 0.2 - 0.6; avg. = 0.3) .3 ⁽⁶⁾
6. Enter the COMBINED STATE & LOCAL INCOME TAX RATE. .06 ⁽⁷⁾
7. Calculate INCREASED INCOME TAX REVENUE. (4) X (5) X (6) \$33,052
8. TAX REVENUE BENEFITS from tourism. Add (3) + (7) \$33,052

C. JOB BENEFITS FROM TOURISM

1. Enter TOTAL SALES from A.6, expressed in millions of dollars. (\$5,600,000 of total sales = \$5.6) 3.1 ⁽⁸⁾
2. Estimate multiplier for JOBS CREATED PER MILLION DOLLARS of total sales. (Range is 10 - 50; avg. = 30) 30 ⁽⁹⁾
3. Calculate new JOBS CREATED by tourism. (1) x (2) 93

WORKSHEET #2 ECONOMIC BENEFITS RESULTING FROM FEDERAL GOVERNMENT
EXPENDITURES FOR PARK RELATED ACTIVITIES

A. SALES BENEFITS FROM FED. GOVT. EXPENDITURES: Dollar value of goods & services purchased in local area by Fed. Govt. spending.

1. DIRECT SALES equal to total amount of park-related Fed. Govt. expenditures that are spent in the local area. \$115,250⁽⁹⁾
2. Estimated INDIRECT & INDUCED SALES MULTIPLIER. (May be higher than number used in Step A.5 in the tourism Worksheet #1. Range is 1.2 - 2.8; avg. = 2.0) 1.6⁽¹⁰⁾
3. Calculate TOTAL SALES BENEFITS from federal government expenditures. (1) x (2) \$184,440

B. TAX REVENUE BENEFITS FROM FED. GOVT. EXPENDITURES:

The following steps are discussed in text Section I. B.

1. Enter TOTAL SALES BENEFITS (Fed. Govt) from A.3 above. N/A
2. Enter COMBINED STATE & LOCAL RETAIL SALES TAX RATE. (Same as B.2 for Tourism from Worksheet #1) N/A
3. Calculate INCREASED SALES TAX REVENUES. (1) X (2) N/A
4. Enter TOTAL SALES BENEFITS (Fed. Govt) from A.3 above. \$184,400
5. Enter the TAXABLE INCOME RATIO (i.e., taxable portion of salaries & business profits: range is 0.2-0.6; avg. = 0.3). .3
6. Enter the COMBINED STATE & LOCAL INCOME TAX RATE. (Same as B.6 from Worksheet #1) .06
7. Calculate INCREASED INCOME TAX REVENUE. (4) X (5) X (6) \$ 3319.
8. TAX REVENUE BENEFITS from Fed. Govt. expenditures. Add (3) + (7) \$ 3319.

C. JOB BENEFITS FROM FED. GOVT. EXPENDITURES

1. Enter the TOTAL SALES (Fed. Govt.) from A.3, above, expressed in millions (\$5,600,000 = \$5.6). .18
2. Estimate the multiplier for new JOBS CREATED PER MILLION DOLLARS OF total sales. (Same as C.2 from Worksheet #1) 30
3. Calculate the new JOBS CREATED by Fed. Govt. expenditures. (1) x (2) 5

APPENDIX C

WORKSHEET #3 ECONOMIC BENEFITS RESULTING FROM PARK-RELATED EXPENDITURES BY OTHER NON-LOCAL PARTIES

A. SALES BENEFITS FROM 'OTHER' EXPENDITURES

1. Enter DIRECT SALES which are expenditures by non-local parties to purchase goods & services connected with park related activities, such as construction of State access roads to the park, motel chain construction projects, concessioner capital improvements, etc.; does not include tourism expenditures or Fed. Govt. expenditures. \$ 599,303 (11)

2. Enter the estimated INDIRECT & INDUCED SALES MULTIPLIER.
(Same as A.5 from Tourism Worksheet #1) 1.6

3. Calculate the TOTAL SALES BENEFITS from expenditures by
"other" non-local parties. (1) x (2) \$ 958,885

B. TAX REVENUE BENEFITS FROM 'OTHER' EXPENDITURES

The following steps are discussed in text Section I. B.

1. Enter TOTAL SALES ("Other" non-local) from A.3 above. \$ 958,885

2. Enter COMBINED STATE & LOCAL RETAIL SALES TAX RATE.
(Same as B.2 from Tourism Worksheet #1) N/A

3. Calculate the INCREASED SALES TAX REVENUES. (1) x (2) N/A

4. Enter TOTAL SALES BENEFITS ('other') from A.3 above. \$ 958,885

5. Enter the TAXABLE INCOME RATIO. (Same as B.5 from
Worksheet #1) .3

6. Enter the COMBINED STATE & LOCAL INCOME TAX RATE.
(Same as B.6 from Worksheet #1) .06

7. Calculate INCREASED INCOME TAX REVENUE. (4) X (5) X (6) \$ 172,599

8. TAX REVENUE BENEFITS from expenditures by
"other" non-local parties. Add (3) + (7) \$ 172,599

C. JOB BENEFITS FROM "OTHER" EXPENDITURES

1. Enter TOTAL SALES ("Other" non-local) from A.3 above
expressed in millions (\$5,600,000 = \$5.6). .95

2. Estimate the multiplier for new JOBS CREATED PER MILLION
DOLLARS of total sales. (Same as C. 2 from Worksheet #1) 30

3. Calculate the new JOBS CREATED by expenditure of "Other"
non-local parties. (1) x (2) 29

APPENDIX C

WORKSHEET #4 SUMMARY OF ECONOMIC BENEFITS ATTRIBUTABLE TO THE PARK FROM THE COMBINED EFFECTS OF VISITOR EXPENDITURES, FEDERAL GOVERNMENT EXPENDITURES, AND OTHER NON-LOCAL PARTIES' EXPENDITURES

A. COMBINED SALES BENEFITS

| | |
|--------------------------------|----------------|
| Worksheet #1, Item A.6, plus | \$3,178,991 |
| Worksheet #2, Item A.3, plus | 184,400 |
| Worksheet #3, Item A.3 equals: | <u>958,885</u> |
| | \$4,322,276 |

B. COMBINED INCREASED TAX REVENUE BENEFITS

| | |
|---------------------------------|----------------|
| Worksheet #1, Item B. 8, plus | \$33,052 |
| Worksheet #2, Item B. 8, plus | 3,319 |
| Worksheet #3, Item B. 8 equals: | <u>172,599</u> |
| | \$208,970 |

C. COMBINED NEW JOBS CREATED

| | |
|---------------------------------|-----------|
| Worksheet #1, Item C. 3, plus | 93 |
| Worksheet #2, Item C. 3, plus | 5 |
| Worksheet #3, Item C. 3 equals: | <u>29</u> |
| | 127 |

APPENDIX D

Visitation Calculations

**1989 Visitation Estimates Based on Entrance Fees,
Group-Use Fees, and Annual Passes**

Fee envelopes:

$$15,710 \text{ fee envelopes} \times 2.4 \text{ average persons per vehicle} = 31,089$$

Collection efficiency factor:

Personal observation by one park staff member was that between 30 and 50 percent of fees were not being collected. Park Division fee projections were 50 percent of that projected. Therefore, we have assumed a 60 percent efficiency rate of collection, and the above figure must be supplemented by 40 percent to generate total summer visits.

$$31,089 \times 40 \text{ percent} = 12,436$$

Group-use:

$$\begin{aligned} \text{FY '90 group-use fees} &= \$7,977 - \$75 \text{ (the fee for groups of 50-100)} = 106 \text{ groups} \times \\ &50 \text{ persons per group} = 5,300 \end{aligned}$$

Annual passes:

A total of all sales from agency and license agents at Canyon Ferry and Townsend, and half of those sold at Region 8, DFWP headquarters, and license agents at Helena, E. Helena, and Mt. City were assumed to be used at Canyon Ferry for 6 visits. This is the number of trips that a pass would have to be used to pay for itself. The remaining number of locally sold passes were assumed to be used at other sites such as Spring Meadow, Black Sandy, or elsewhere.

$$\text{Annual passes sold} = 2890 \times 6 \text{ visits per pass} = 17,340$$

$$\text{TOTAL ESTIMATED 1989 SUMMER VISITATION} = 66,165$$

Winter visitation:

According to the DFWP 1986 On-site Recreation Survey, winter visitation was primarily for ice-fishing (78 percent of a small sample). DFWP angler pressure surveys for 1989 show that 40 percent of visitation occurred in the winter. Therefore, the winter visitation was assumed to total 40 percent of the total.

$$66,165 \times .40 = 110,275$$

$$\text{TOTAL ESTIMATED 1989 VISITATION} = 110,275 \text{ BASED ON FEE COLLECTION}$$

Visitation Based on DNRC Survey

The DNRC conducted a recreation survey for instream flow reservations within the Missouri River basin (Instream Flows in the Missouri River Basin: A Recreation Survey and Economic Study, DNRC, 1989). A total of 9000 questionnaires were mailed; 2000 to residents of each of the three subbasins, 2000 to Montanans living outside the Missouri River basin, and 1000 to holders of nonresident conservation licenses. The survey response rate was 54 percent.

The results of this survey were compared to angler pressure surveys conducted by DFWP in 1989 where 36,000 questionnaires were mailed and 19,271 returned.

While resident figures for this survey are assumed to be accurate, nonresident figures are felt to be low. All other 1989 surveys show nonresident proportion of use to be between 11 and 26 percent for Canyon Ferry. This survey shows four percent nonresident use. Since fee envelope data for 1989 is the largest and most recent survey available, we have assumed it to be fairly accurate (26 percent nonresident) and have adjusted it slightly downward (one percent) to account for some resident resistance to fees.

Therefore, the adjusted visitation figure from the DNRC survey is:

| | |
|---------------|-----------------------------------|
| 164,702 | resident visitation |
| <u>41,175</u> | 25 percent nonresident visitation |
| 205,878 | TOTAL 1989 VISITATION ESTIMATE |

1989 Visitation Estimates from Traffic Counts

The last visitation estimate prepared by DFWP for Canyon Ferry was in 1986. This total was based on extrapolation from traffic counts taken at 16 sites at Canyon Ferry, and from traffic trends on feeder roads leading into Canyon Ferry. The person-per-vehicle unit-of-measure was 2.96 in 1986.

Visitation from this estimate totalled 623,700 for Canyon Ferry. According to Parks Division personnel, this figure is assumed to be between 30 and 50 percent too high so it is hereby adjusted downward by 40 percent (-249,480).

This generates a 1986 base year visitation of 374,220. From the end of 1987 to 1989, traffic counts measured at three representative sites showed an average drop of 18 percent.

$$374,220 \times .18 = 67,359 \text{ (decline based on trends)}$$

$$374,220 - 67,359 = 306,861 \text{ TOTAL 1989 VISITATION ESTIMATE BASED ON TRAFFIC COUNTS}$$

**ENVIRONMENTAL ASSESSMENT
OF THE
CANYON FERRY RESOURCE MANAGEMENT PLAN**

**CANYON FERRY MANAGEMENT PLAN
ENVIRONMENTAL ASSESSMENT**

1. INTRODUCTION

This programmatic environmental assessment (EA) has been prepared in compliance with the Montana Environmental Policy Act (MEPA), National Environmental Policy Act (NEPA), and House Bill 495, legislation that requires consideration of the wishes of park users, capacity of site development, environmental impacts, long-range maintenance, protection of natural resources, and impacts on tourism. Its purpose is to inform the public and decision makers of the proposed action and its related potential impacts, benefits, and mitigations.

This EA is programmatic; it addresses a general course of action and a group of implementation activities rather than a specific activity. As specific development activities are proposed for Canyon Ferry, the appropriate level of environmental review will have to be initiated, and public involvement renewed. For example, site-specific impact evaluations of recreation proposals are not addressed in this EA, however, as sites are developed, each would require environmental review. If DFWP is involved in site development, environmental review would include the requirements of HB 495.

The primary study area covered in this plan includes all lands surrounding Canyon Ferry Reservoir that are under the administration of Reclamation, the use of the water within the reservoir, and of streams tributary to it. In addition, Reclamation lands at the base of the dam are included. Consideration is also given to land adjoining Reclamation property if its current or known future use will significantly affect, or be affected by, policies and management proposals in this plan.

2. PURPOSE AND NEED

Canyon Ferry Reservoir was constructed in 1954 by U.S. Department of Interior, Bureau of Reclamation (Reclamation). It is operated to provide flood control; as a source of water for power generation, irrigation, municipal and industrial uses; and to enhance recreation, fish, and wildlife benefits.

Since 1957, aspects of reservoir management have been shared by Reclamation and the Montana Department of Fish, Wildlife and Parks (DFWP). Both agencies have written management plans for the reservoir; Reclamation in 1958 and DFWP in 1976. These plans are outdated, no longer reflecting current needs, demands, and budgets.

The Canyon Ferry Resource Management Plan will guide all recreational, wildlife, fisheries, and management activities at Canyon Ferry State Park. It establishes goals and objectives for such management, and provides a history and baseline for measuring the progress and success of suggested management.

Recreation use of Canyon Ferry is expected to grow over the next decade, both due to population growth and growth in recreational demand. Conflicts between on- and off-site developments are also expected to increase within the timeframe of this plan (10 years). Critical natural resources

and wildlife habitat are in need of recognition and protection, and socioeconomic opportunities associated with Canyon Ferry can be enhanced by management agencies.

It is the purpose of the plan to balance recreation development and expansion with important wildlife values, conservation, and environmental protection.

3. PROPOSED ACTION AND ALTERNATIVES

In order to meet environmental laws and to formulate the best management prescriptions for Canyon Ferry, two management alternatives were developed; an action alternative, Alternative A, and a no action alternative, Alternative B. Goals and objectives were used as a set of criteria against which management alternative programs and policies could be evaluated.

Upon comparing the alternatives with the goals and objectives, reviewing them for compatibility with environmental protection and socioeconomic benefits, reviewing the alternatives with the public at four public forums, and reaching agreement between agencies and the Master Advisory Committee, Alternative A emerged as the preferred alternative (see Figure 1).

Alternatives evaluated:

Alternative A - A management plan based on balancing recreation development and expansion with important wildlife values, conservation, and environmental protection. This alternative is the proposed management plan. It allows for expansion of existing recreation sites and development of new recreation areas while also establishing new wildlife management areas and expanding knowledge of and protection for existing habitat and species. Policies and programs are included in the plan to reduce conflicts between user groups, reduce resource degradation, provide administrative tools for management such as visitation and capacity data, and offer interpretive programs for natural and cultural resources. A full description of the proposed action is contained in Chapter 4 of the plan. Alternative A is contingent on receiving substantial federal funding.

Alternative B - This would be the no action alternative, a continuation of the status quo. No plan would be implemented and management would proceed at the direction of the ultimate management agency (cies). Alternative B would continue the present management situation at Canyon Ferry, one in which public opportunities for recreation and education are not maximized, and one in which public and natural resources are sometimes in jeopardy or are deteriorating.

3.1 Alternatives Considered But Dismissed from Further Study

Other alternatives suggested but dismissed from further consideration included the following:

-- **A management plan that would favor wildlife and conservation/environmental protection over recreation development.** No recreation site expansion would have been

Note: Multi-use trails are conceptual. Exact locations and distances are yet to be determined.

Sign, "WMA Access"

Duck Blinds

Disabled Accessible Trail

Sign, "WMA Access"

Missouri River Nature Trail:
Wildlife Interpretive Site

Indian Road: New
Visitors Center, Camping

Sign, "Fishing Access,
Ice-boating"

Heligate: Walk-in Area
For Antelope Hunters

New WMA
Water,
Accession Site

Parking

Jo Bonner:
New Group Use Area

Rivers
Camp

Figure 1
Alternative A
Proposed Plan

conducted and the entire east side of the reservoir would have been designated a wildlife management area. This alternative was given consideration by management agencies and the public. However, it was not compatible with the majority views expressed at public forums held on alternatives; users favored a variety of recreation opportunities and desired resource protection. Further, this alternative would not address the strategic planning goals of Reclamation or DFWP as well as Alternative A.

-- **A management plan that would favor recreation expansion over wildlife and conservation/environmental protection. This alternative would advocate for off-road vehicle (ORV) use, recreation site expansion of Duck Creek, and intense recreation development of Confederate, Goose Bay, and lands north of Hellgate. No new WMAs would be established.** This alternative was considered and dismissed for the same reasons as mentioned above. In addition, serious concerns surfaced about intense development and ORV use because of the highly-erodible nature of area soils, and secondary impacts on wildlife and other natural resources.

-- **Sell off portions of the study area for private development.** This alternative was dismissed because Reclamation requires the lands for project purposes such as flood control, both now and in the future, and because recreation demands around the reservoir have substantially increased since the dam's construction and are expected to continue to do so.

-- **Manage only the north half of the study area for recreation and allow the remainder to revert to a primitive area with no fees charged.** While the north half of the study area does receive the greatest share of recreation use at Canyon Ferry, active recreation is pursued in the entire study area. Since lands are within the state park system, and fees are applied to all state park sites, a fee equity problem would arise from this alternative. The public and area managers had also proposed uses that would spread recreation use around the reservoir by providing hiking trails, watchable wildlife areas, and interpretive tours. These activities imply the need for areawide investment and management.

3.2 Environmental Commitments

A list of environmental commitments is included in Appendix D.

3.3 Summary of Impacts

A summary of impacts by alternative has been provided to simplify comparison of alternatives. See Table I.

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3.2 Environmental Commitments

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3.3 Summary of Impacts

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TABLE 1.

Summary of Impact by Alternative

| ALTERNATIVE A | ALTERNATIVE B |
|--|---|
| <p>GEOLOGY</p> <p>There would be some disturbance to underlying geology due to recreation development. Beneficial impacts would occur from establishing a geologic interpretive program.</p> | <p>There would be little additional land disturbance, thus relatively less geologic impact. No beneficial impact would occur; interpretive programs would not be established.</p> |
| <p>SOILS</p> <p>Beneficial impacts on area soils would occur from consideration of soil conditions in future development plans, protection of sites from wave action, limiting disturbance to soils by curtailing trespass vehicular use and physically designating campsites. Secondary beneficial impacts would occur from dust control measures and landscaping which would, in turn, protect soils. Some soils impacts would continue to be unavoidable from general recreation use of the area. If an ORV use area was designated, increased erosion and sedimentation would be unavoidable.</p> | <p>Impacts on soils would be greater. Soil protection would occur only as money was available to provide mitigation at specific sites. Dust abatement measures would be the same as alternative A. Unrestricted vehicle trespass would continue, generating widespread secondary impacts of erosion and sedimentation. Some soils impacts would be unavoidable from general recreation use.</p> |
| <p>WATER RESOURCES/QUALITY</p> <p>The Missouri River riparian system and fishery would benefit from minimum instream flows, restricted spills, and updating the Missouri River Advisory Council's guidelines. Reservoir levels would target optimal seasonal elevations. Water quality would be protected by the formulation of a mosquito control plan prior to pesticide use, educating users about the effects of sewage effluent, continuing DHES-WQB programs for agricultural operators, design of a water quality monitoring program, providing new sanitary dump stations, and revising septic tank policies for cabin lessees. Water use would increase slightly from irrigation of landscaping, provision of water at existing and proposed recreation sites, and greater visitation.</p> | <p>Missouri River and reservoir level guidelines would likely be implemented as in Alternative A. Water quality problems would not be addressed on a programmatic basis and most water quality protection measures would not occur, leaving the potential for groundwater contamination at recreation and cabin sites. Water use would not increase greatly.</p> |
| <p>VEGETATION</p> <p>Area vegetation would benefit from a weed control program, landscaping, conducting vegetation inventories prior to development, providing vegetation buffer zones around recreation sites, and curtailing trespass vehicle use. If an ORV use area was established, it would have moderate unavoidable impacts on vegetation in a designated area.</p> | <p>This alternative would have far fewer beneficial impacts on vegetation. Landscaping and buffer zones would not be established and weed control efforts and vegetation protection would be substantially hindered by continued trespass vehicle use.</p> |

| ALTERNATIVE A | ALTERNATIVE B |
|---|--|
| <p>WILDLIFE</p> <p>Moderate benefits would occur under this alternative from expansion of the WMA and two added WMAs. Wildlife habitat would be enhanced by curtailing trespass vehicle use, identifying and protecting critical wildlife habitat, implementing the DFWP wildlife plan, and conducting periodic raptor surveys. Species of special concern would be protected under existing federal and state laws.</p> | <p>Minor negative impacts would occur under Alternative B. No new WMAs would be established. The DFWP wildlife plan would guide management however, and species of special concern would be protected under existing plans and laws. Trespass vehicle use and weeds would continue to impact habitat.</p> |
| <p>FISHERIES</p> <p>Beneficial effects would occur from implementation of the DFWP fisheries management plan, including enhancing the trout and perch populations, collecting fisheries data, preventing illegal fish introductions, continuing habitat protection, addressing impacts via the Missouri River Advisory Council, and identifying critical habitats. Fishing access would be enhanced by site improvements.</p> | <p>Same as Alternative A but little new site improvements for fishing access and potentially less money for implementation of fisheries programs.</p> |
| <p>CLIMATE</p> <p>No measurable climatic impacts would occur from this alternative. Localized weather data would be used in facilities planning. Additional weather stations would be established.</p> | <p>Same as Alternative A except climate data would not be considered in site design and weather stations would not be built, prolonging public safety impacts and potentially reducing longevity of recreation improvements.</p> |
| <p>AIR QUALITY</p> <p>Minor unavoidable impacts would occur from dust and vehicle exhaust emissions. Dust controls would be continued and many area roads eventually paved.</p> | <p>Would maintain dust controls but roads would not be paved. Emissions would continue from area users and trespass vehicles would cause increased dust.</p> |
| <p>SOCIOECONOMICS</p> <p>Alternative A would have significant beneficial impacts on the local economy and minor beneficial effects on statewide economy if federal funding is received. Increased capital expenditures would generate minor increases in employment for construction, and increased operations and maintenance would generate increases in administration employment. Entrance fees would be increased by more enforcement, promotion, and diversity of activities. Cabin site lease fees raised would be raised within the timeframe of the plan. Public services and safety would be increased by additional RV dump stations and provision of potable water, the continued monitoring of blue-green algae, conducting a communications evaluation of the study area, establishing an early warning system for storm fronts, and providing boating regulations and tips.</p> | <p>Local and statewide economies' benefits would remain about the same. Spending would remain at about \$250,000 annually for O & M and capital costs. Benefit to local economies from tourism would remain static except from growth in use over time. Cabin site lease fees maintained at current levels. Public services maintained at current levels, resulting in potential public health and safety impacts.</p> |

| ALTERNATIVE A | ALTERNATIVE B |
|---|---|
| <p>LAND USE AND OWNERSHIP</p> <p>Alternative A would expand WMAs and recreation development. Potential development of a marina at end of lake would increase commercial development. Land use conflicts reduced by providing buffer zones around recreation sites; preparing, publicizing, and enforcing cabin site building standards; preparing a Canyon Ferry Village plan; boundary fencing; and formalizing a signing program for the park. Unavoidable conflicts could occur between on- and off-site as area use grows. Cabin lease sites would be retained for public purposes, impacting those who advocated sale of the sites to private parties. The need for expansion of Canyon Ferry airport would be examined in light of this plan.</p> | <p>Land uses would be maintained at current levels. Conflicts between area users and between area users and adjacent owners would probably increase to a greater degree due to lack of buffer zones, boundary fencing, landscaping, signing, enforcement, and continued vehicular and livestock trespass. Cabin site lease area management would maintain the status quo; uncertainty about sale of the sites would continue indefinitely. The airport expansion would be examined exclusive of any plan.</p> |
| <p>RECREATION</p> <p>Beneficial impacts would occur from visitation monitoring and capacity analyses. Recreation improvements disturb an additional 90 \pm acres, growing from an estimated 286 to 376 acres of recreation development. Alternative A would expand diversity and number of recreational activities with interpretive programs, additional and expanded sites, more disabled-access, multi-use trails, increased visitor information, and construction of visitor information centers. ORV use would be eliminated on Reclamation lands and designation of an ORV use area on nearby public lands explored. Recreation improvements would cost about \$400,000 in annual O and M and \$1.4 million annually for a 5-year capital improvements program if federally funded. Visitation would likely increase due to promotion and diversification of activities. The continuation of pioneer camping could sustain resource damage and higher administration costs over time.</p> | <p>Visitation and capacity analyses would not take place, reducing the management agencies' ability to manage. Lack of diversification and promotion would reduce visitation below the level of Alternative A and reduce recreational opportunities. Trespass ORV use would continue largely unregulated. New recreation development and improvements would not occur but neither would associated costs. Capital and operations and maintenance costs would remain about at current levels. Pioneer camping would also be allowed under this alternative with its attendant impacts.</p> |
| <p>TRANSPORTATION</p> <p>Beneficial impacts from improvement of safety and accessibility for all users would result from upgrading East and West Shore roads, providing a new access road to White Earth, conducting a safety and engineering analysis of the study area road system, providing more disabled-access sites, signing and marking access sites, and preparing a travel plan and map for the area. Costs to improve roads for recreation traffic would be about \$4.2 million over 5 years. Secondary impacts would unavoidably occur on roads accessing the study area.</p> | <p>Few safety improvements would occur, increasing public safety impacts with increased use. Accessibility would not be improved. Few transportation costs would be generated aside from the current level of maintenance. Secondary impacts on adjacent roads would occur to a lesser degree since visitation is assumed to be less than Alternative A.</p> |

| ALTERNATIVE A | ALTERNATIVE B |
|---|--|
| <p>CULTURAL RESOURCES</p> <p>Beneficial impacts to cultural resources would be substantial from completing an inventory of cultural resources, increased surveillance of sites, developing compliance procedures so that resources are protected, complying with existing laws for cultural resources on all new projects, developing law enforcement procedures for ARPA violations, developing interpretive displays for cultural resources, and preparing a cultural resource management plan. All sites would be evaluated for eligibility to the National Register of Historic Places. Some additional land disturbance would occur, potentially affecting cultural resource sites.</p> | <p>Alternative B would sustain the lack of cultural resource information both for managers and the public. Interpretive programs would not occur. Some resources could be irretrievably lost due to vandalism and trespass vehicle use. Environmental compliance would be required prior to any future development but there would be no ARPA enforcement.</p> |
| <p>MANAGEMENT AND ADMINISTRATION</p> <p>Beneficial impacts for management and administration would result from visitation and capacity analyses, developing a fire management plan, designating campsites, formulating a Canyon Ferry Village plan, revising the MOU between managing agencies, preparing a statewide concessions policy, reviewing agency policies to ensure that they comply with NEPA/MEPA, developing an interagency sign-off procedure for land use decisions, designating a single contact agency to route permitting, and clarifying the purpose and priorities of the OTT.</p> | <p>Under Alternative B, a statewide concessions policy would eventually be completed but the remaining programs and management advances would not. The status quo severely hampers optimum management for Canyon Ferry.</p> |
| <p>VISUAL RESOURCES</p> <p>Alternative A proposes to mitigate and protect visual quality by developing standards for all structural improvements, by landscaping and providing visual buffers and by participating in timber harvest planning with the USFS to protect scenic qualities around the reservoir.</p> | <p>Visual quality would be reduced by this alternative. No standards or visual mitigations would be pursued as in Alternative A. The recreational experience at Canyon Ferry would be reduced over time by a lack of visual quality maintenance.</p> |
| <p>NOISE</p> <p>Beneficial impacts could result from resolution of noise conflicts. Unavoidable increase in noise levels would occur as use on the reservoir increases. If an ORV use area was designated it would increase noise levels in the immediate vicinity.</p> | <p>Noise conflicts would continue in busier areas and from trespass of ORVs on study area lands. Noise levels would increase over time with rising visitation but to a lesser degree than Alternative A.</p> |

4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Detailed description of the affected environment is presented in Chapter 2 Existing Environment, of the management plan. For further information on any of the resource topics, please refer to the plan. The affected environment and environmental consequences sections have been combined to shorten and simplify the presentation of information.

4.1 Highlights of the Study Area

The study area encompasses about 9,360 acres of land (at lake elevation 3,797') along the 76-mile perimeter of Canyon Ferry Lake. The lake itself covers about 35,200 acres, extending upstream from Canyon Ferry Dam about 25 miles to a point where the Missouri River enters the lake at its southern end. Several side-streams feed the lake and some of these support trout spawning.

Vegetation in the reservoir area ranges from willow, cottonwood, and other bottomland trees along the upper shore of the lake, to bunchgrass, juniper and sage on the higher, gently sloping hills. Evergreen and shrubby vegetation grow on the steep, rocky lands at the north end of the lake and on the Helena National Forest lands rising above the lake to the east and west. The valley in which the reservoir is located widens from about 1,000 feet at the dam to about eight miles near Townsend.

The reservoir supports a wide variety of aquatic life, including rainbow and brown trout, and yellow perch. Historically, these game fish have attracted anglers in sufficient numbers to make Canyon Ferry one of the most popular fisheries in Montana. Waterfowl populations, whose habitat has been greatly improved by a 5000-acre dust abatement and wildlife management area, are evident year-round. The variety includes geese, ducks, pelicans, cormorants, and a host of other resident and migratory birds.

Wildlife includes white-tailed and mule deer, antelope, and even occasional elk and moose. Hunters are attracted to the study area by these animals and game birds such as grouse, ducks, geese, and pheasants. Non-game species include smaller animals such as song-birds, beavers, mink, rabbits and osprey. Bald eagles have recently increased their visitation to the area, particularly in the fall when they feed on spawning Kokanee salmon below the dam near Riverside Campground.

As of 1990, the study area supported 24 public recreation sites including 12 overnight campgrounds, some of which can be reserved for group use; nine day-use areas; one site reserved exclusively for group use; and two sites accessible only by boat. In addition, there are three private concessions; Yacht Basin and Kim's Marina at the north end of the lake, and Goose Bay Marina located along the lake's east shore. A 5,000-acre wildlife management area (WMA) has been established at the south end of the reservoir.

Lands along the shoreline are also used for a variety of other purposes, including groups of cabin sites along the northeast and -west shores, agricultural uses -- both cropping and grazing, and dispersed recreation and hunting. The reservoir is used for fishing, boating, sail-boarding, water-skiing, swimming, and a myriad of other water-related activities. Water from the reservoir also serves as a municipal water source for Helena, an irrigation source for the Helena Valley, and

as a source of power generation at Canyon Ferry Dam.

The study area lies in the jurisdiction of two counties; Lewis and Clark to the north and Broadwater to the south (see Figure 2). The nearest population centers are Townsend, about three miles south, and Helena, about 15 miles northwest. The reservoir serves as a statewide recreational facility but the majority of visitors come from a region within a 120-mile radius, including the towns of Helena, Great Falls, Butte, Missoula, and Bozeman.

4.2 Geology

Neither of the alternatives considered would significantly impact the geology of the area. Alternative A would incorporate self-guided or organized interpretive tours that would provide greater public understanding of the area's geology.

Alternative B, the no action alternative, would have no formal program for geologic interpretation.

4.3 Soils and Topography

All soils in the study area are considered highly to moderately wind-erosive. East-shore soils have a high lime content that produces the dust evident on windy days. This condition has prompted the use of dust abatements on east-shore roads, in particular. Soils in the study area, some of which are shallow and/or located on steep slopes, are subject to the erosive actions of wind, precipitation, waves, and human activities. Some area soils are prime if irrigated. Most of these (about 1,000 acres) are located in the WMA at the south end of the lake (U.S. Department of Agriculture 1972). See figures 4, 5, and 15 in the RMP for soils and topography data.

Alternative A would likely have little impact on soils resources because recreation development areas were sited so as to avoid concentrations of primes soils, because vigorous soil-disturbing activities, such as off-road vehicle (ORV) use have been minimized, and because soils protection policies have been incorporated into the plan. These include fencing and better designation of human use areas. Future recreation development proposed under this alternative would be subject to site-specific environmental review and compliance. If an ORV use area was sited at Canyon Ferry, moderate impacts to soils would occur, though this would probably be a small portion of the study area. Secondary air quality impacts could occur from disturbance of protective vegetative cover in the ORV area. Mitigation could include the use of dust abatement and monitoring resource damage. Some impacts from ORV use would be unavoidable.

It is assumed that Alternative B would incorporate the current level of management for soil protection. The current level includes private, unregulated efforts to curb the effects of wave action along the shore adjacent to cabin sites and, as funds allow, projects within recreation sites to direct human activity away from over-used or sensitive sites. Livestock and off-road vehicle trespass would continue since boundary and internal fencing would not be completed. Therefore, impacts on soils under Alternative B would be a continuation of current soil erosion trends in the study area.

MONTANA

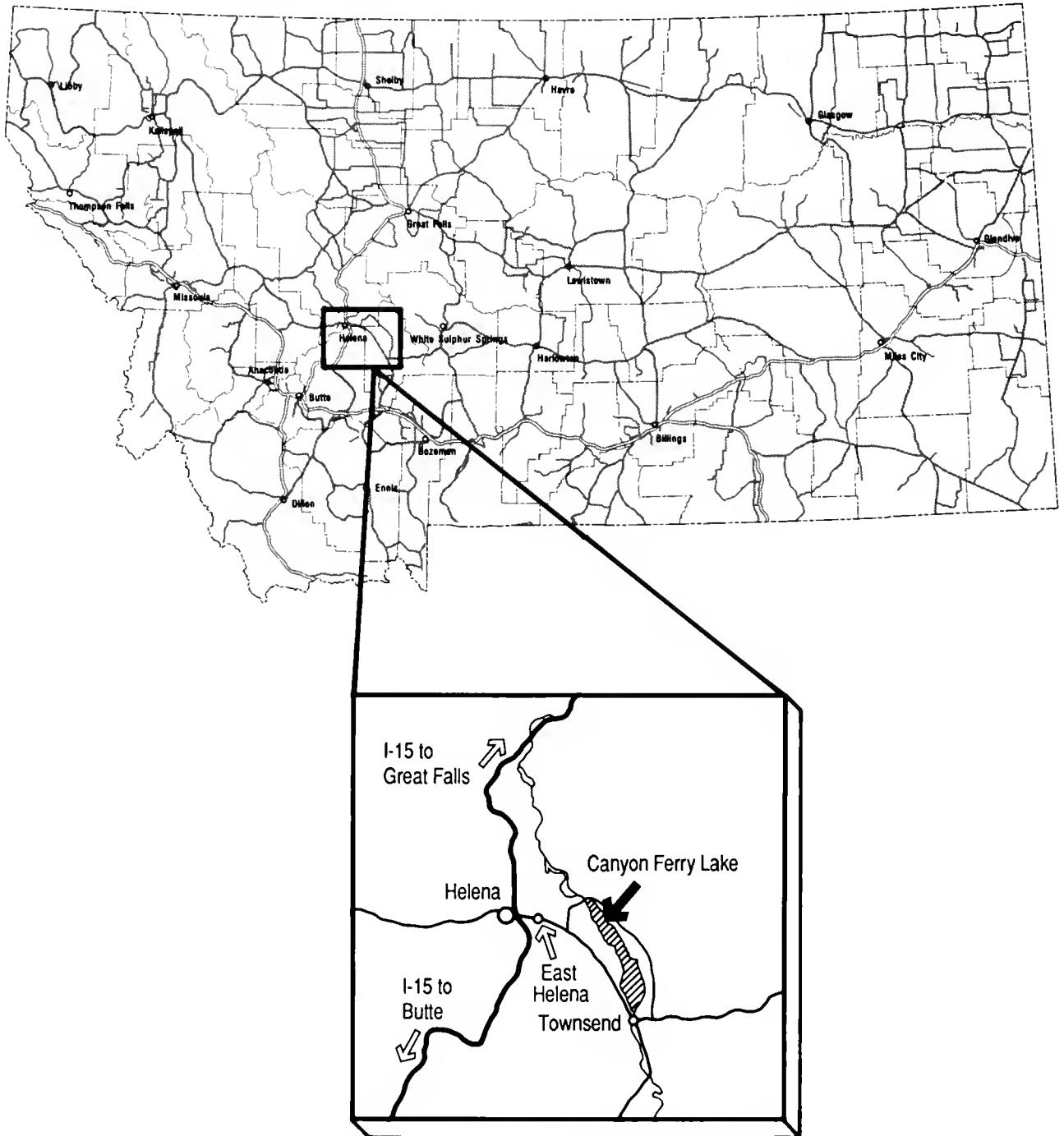


Figure 2
Vicinity Map

4.4 Water Resources and Quality

All recreation sites and the majority of cabin sites rely on ground water for potable water. Over the period of record, wells at some of the recreation sites have shown occasional levels of high coliform counts due to the shallow depth of the wells. DFWP and state Water Quality Bureau (WQB) monitor these wells at regular intervals. Two water quality concerns are associated with fractured bedrock and density of development of the cabin sites. Both factors may eventually contribute to ground water degradation.

Water quality in the reservoir is generally suitable for propagation of cold-water fish, safe for water sports and is potable after filtration and treatment. Reservoir waters contain high levels of phosphorous and arsenic, and water quality has been relatively stable (Roger Knapton, USGS, personal communication, 1/6/92). Occasional blue-green toxic algae blooms, the potential for pollutant contribution from poorly-functioning septic tank drainfields, motorboat fuels, runoff from roads, hazardous materials, and agricultural herbicides and pesticides, are all of concern.

The action alternative advocates mitigation of existing water quality problems by design of a standard water quality monitoring program, education of area users about the effects of sewage effluent and treatment systems, and continued Water Quality Bureau (WQB) programs for agricultural operators within the study area to reduce pollutants entering the reservoir. Further, the action alternative proposes to address waste disposal and water quality issues associated with the cabin sites, campgrounds, and other development by working with the county health departments and the WQB. Surface water use could increase for landscaping under this alternative.

The Missouri River riparian system and fishery would benefit from minimum instream flows, restricted spills, and updating the Missouri River Advisory Council's guidelines.

Alternative B would maintain on-going programs that monitor toxic algae blooms and water quality at recreation sites. State and county health departments would continue to regulate water quality. However, aggressive efforts to address water quality problems would be initiated only in response to crises and as funding allowed not through system-wide monitoring or education programs. Potable water would be provided at sites currently served. Missouri River guidelines would likely be implemented as in Alternative A.

4.5 Vegetation

Four distinct vegetative groups, based on life form and species composition, are present around the perimeter of Canyon Ferry Lake (see Figure 6 in the RMP). The vegetative groups are grassland, upland shrub, coniferous forest, and riparian vegetation. Within these four groups are several distinct habitat or dominance types. Additionally, vegetation types are described that are primarily composed of introduced species, and do not correspond to a classification system (see Appendix A for a complete list of species).

No rare or endangered plant species were observed during vegetation studies. One sensitive plant (rabbit crazyweed, *Oxtropis lagopus* var. *conjugens*) is known to occur in the study area. It is ranked as globally secure, but imperiled in Montana by the Montana Natural Heritage Program (1991). It is found on the west side of the lake, in the Ponderosa pine habitat type.

The importance of wetlands for providing vital wildlife habitat, watershed, erosion and flood control, and esthetic and recreational functions has been recognized in a variety of federal and state laws. When alteration of a wetland is contemplated, these laws come into effect. Aside from the lake itself, most of the individual wetland sites found are associated with the fringe of the reservoir and have become established since its filling in the early 1950s. More recently-established wetlands are associated with the dike system completed in 1978. Wetlands are also associated with the Missouri River at the south end of the lake and perennial tributaries such as Duck Creek.

Historical agricultural, recreational, and grazing use of the study area is evident in the presence and abundance of introduced species, particularly pasture grasses and weedy forbs. Noxious weeds, in particular leafy spurge and spotted knapweed, appear to be present in all vegetation communities around the lake, and are particularly abundant in the wetland and riparian communities.

It is assumed that neither of the alternatives would radically alter existing vegetation types currently found in the study area. Weed infestations would continue to a greater or lesser degree. Alternative A would have the least negative impact on vegetative communities and could benefit vegetation resources and mitigate damages by weed management activities, human traffic control, and landscaping. Wetlands communities and sensitive plant species are assumed to receive equal protection both of the alternatives.

Alternative B would have relatively more negative impacts on vegetation since increased activity and a lack of protection under Alternative B could impact vegetative cover. Though the beneficial effects of landscaping and weed control program could take place under this alternative, neither of these activities would be emphasized as they are assumed to be under the first alternative. Further, weed infestations would be harder to control as vehicles and livestock spread weeds onto lands via trespass use.

4.6 Wildlife

The diversity of wildlife habitat at Canyon Ferry supports an abundance of species including deer, antelope, and even moose and elk (see Appendix B for a complete list of species and figures 8 and 15 in the RMP). Waterfowl use of the reservoir has increased dramatically over the years due to the dike system and wildlife enhancement measures carried out since 1978. Non-game species include songbirds, rabbits, beavers, and osprey. Species of special concern supported by study area lands include the federally-listed endangered bald eagle and peregrine falcon. Also within the study area are Ferruginous hawks, a state species of special concern.

Plans in effect to protect threatened and endangered species are incorporated by reference in the Wildlife section of the plan. Areas known to be used by these species are mapped to alert future

managers. Consultation and coordination with DFWP and U.S. Fish and Wildlife Service was conducted during plan preparation to assure compliance with state and federal protection laws (see correspondence in Appendix B). Site-specific development would undergo environmental review to further assure protection of these species. Efforts to avoid impacts to these species would be made. If avoiding impacts was not possible, development would be precluded.

Species of special concern would be accorded protection under laws and plans currently in effect or that were developed.

Alternative A offers the greatest degree of benefit to wildlife in that it proposes to establish expansion of the existing WMA and additional WMAs, portions of which protect critical habitat for mule deer, antelope, and waterfowl. Though recreation development would occur, ORV and livestock trespass would be curtailed, diminishing habitat disturbance and providing additional forage and cover. The DFWP wildlife management plan would be implemented under both alternatives although there might be less money available for implementation under Alternative B.

Alternative B would essentially maintain the current level of wildlife management without establishing additional WMAs. As such, impacts on wildlife would remain; trespass and associated impacts would continue, and habitat management would not be enhanced. Proliferation of weedy species would continue to a greater extent than under Alternative A due to continued off-road vehicle and livestock trespass. This, in turn, would reduce habitat quality. Species of special concern would continue to be protected by existing laws as in Alternative A.

4.7 Fisheries

Canyon Ferry is one of the most heavily fished bodies of water in Montana, usually ranking in the top ten in fishing pressure. Generally, fishing pressure trends tend to parallel the fishing success on the reservoir. When rainbow trout numbers and catch rates decline, so do angler numbers. Yellow perch has been on the rise in fishing popularity, particularly during the winter months.

Catch rates for rainbow trout have been poor since 1986, reducing angler numbers at Canyon Ferry. DFWP has conducted a substantial fish-planting and fish management campaign that may be paying off. 1992 surveys indicate that spring stocking efforts were very successful. Gill net catches in the summer of 1992 were the highest since records have been kept (1986). It is too early to tell whether this will be a consistent pattern, however (Mark Lere, DFWP, personal communication, 12/10/92).

Fisheries management would remain substantially the same under each of the alternatives. Fisheries management is aimed at developing a high quality fishery while protecting established fish species in tributary systems, so impacts are implicitly minimized through the adopted fisheries plan for the reservoir. The plan calls for enhancement of the trout and perch populations, collecting fisheries data, preventing illegal fish introductions, continuing habitat protection, addressing impacts via the Missouri River Advisory Council, and identifying critical habitats.

Alternative A would offer more fishing access sites due to new recreational development and potentially more money for fisheries plan implementation than would Alternative B.

4.8 Climate

The climate of the study area is modified continental, influenced by Pacific Ocean air masses, drainage of cool air from the surrounding mountains, and the protection of the mountains in all directions. These modifiers make temperature less dramatic than those of a true continental climate.

However, Canyon Ferry is subject to occasional violent wind, rain, and lightening storms. High wind events rapidly deteriorate safety conditions for recreationists. Ice jams, wind, and storm events have and will continue to take a toll on water-based improvements in the lake such as boat docks and breakwaters.

Neither of the alternatives would create measurable climatic effects. The action alternative would take climatic conditions into account when preparing development site plans and provide new weather stations. Alternative B would not benefit from programmatic planning, including use of climate data, prolonging potential public safety impacts due to high winds and sudden storms, and potentially reducing the longevity of recreation improvements, such as moorings and breakwaters.

4.9 Air Quality

Air quality is generally good in the study area with pollutants originating primarily from wind blowing over unpaved roads, and vehicle exhaust emissions.

Alternative A would maintain dust control measures on area roads until chip/seal surfaces were applied. Emissions from study area users' vehicles would continue to a greater or lesser degree under both alternatives, however Alternative B would continue to contribute vehicle exhaust emissions and dust from trespass vehicles. Under Alternative B, dust control measures would be applied but area roads would not be paved.

4.10 Socioeconomics

Population. The overall socioeconomic region from which Canyon Ferry receives the vast majority of visitation is expected to grow by 17 percent by 2010. It is probable that Canyon Ferry will experience increased use based on population growth alone. Any of the alternatives would have negligible effects on population of the region.

Current Economic Impact. Total statewide sales benefits outside the local area from tourism related to Canyon Ferry were estimated to be \$1,647,379 in 1989. Income tax benefits derived from this income are estimated to have been \$29,653. Total jobs created were estimated at 48, primarily in the greater socioeconomic study area including Gallatin, Butte-Silver Bow, Cascade, Missoula, and Yellowstone counties.

Total direct and indirect sales benefits for the local economies of Lewis and Clark and Broadwater counties, including tourism and state and federal expenditures, were estimated to be \$4,322,276 in 1990. Increased income tax revenues were about \$208,970 and 127 jobs were supported by these expenditures in the local economy.

In an attempt to allocate economic benefits between the two counties, a comparison of retail trade was conducted. It was assumed that Broadwater County had 2.8 percent of combined direct and indirect sales that Lewis and Clark did.

Carrying this over, it can be projected that benefits from Canyon Ferry were distributed in the following way:

TABLE 2.
Distribution of Benefits between
Lewis and Clark and Broadwater Counties
1989

| | <u>Lewis and Clark</u> | <u>Broadwater</u> |
|-------|------------------------|-------------------|
| Sales | \$4,201,252 | \$121,024 |
| Taxes | \$203,119 | \$5,851 |
| Jobs | 121 | 6 |

Alternative A would significantly raise capital and personnel requirements. Based on management and capital improvement estimates made for a possible management partnership between BLM, DFWP, and Reclamation, it would cost about \$418,000 in annual operations and maintenance and \$1.4 million in capital improvements over a 5-year period between FY94 and FY98 to implement Alternative A.

Alternative B would maintain current levels of expenditure and revenue for the management agency.

Either of the alternatives are assumed to have a beneficial impact for DFWP since Canyon Ferry would no longer require the level of contribution now made by the state. The state would continue to manage cabin sites, wildlife, fisheries, and provide enforcement on the water under each of the alternatives, at a level commensurate with fees collected from the area. However, it is assumed that other Parks Division funds now spent on Canyon Ferry would be spent on remaining sites in the state park system. Therefore, Montana taxpayers would see little change in their overall contribution towards state parks management.

Since the vast majority of funding to implement the management plan would come from a federal source (BLM or Reclamation) under the alternatives, Montanans would enjoy enhanced management and improvements borne by substantial federal contributions. (If a federal funding

bill for Canyon Ferry is not forthcoming, an alternative with economic effects similar to Alternative B is likely.)

Indirect effects of capital improvements under Alternative A (\$1.4 million between 1993 and 1998) alone would have substantial beneficial effects on the local economy, and potential minor effects on the statewide economy.

Alternative A advocates a program to promote visitation to increase entrance fees collected, and benefit local economies. Without substantial (and highly speculative) economic analysis beyond the scope of an EA, it is difficult to predict the amount of visitation that would occur with or without such a program. Suffice it to say that relatively more visitation would be expected with a promotional program and relatively less without it. Therefore, Alternative A would likely have the greatest economic benefits associated with increased visitation.

Both alternatives are assumed to retain the cabin site leases within the timeframe of the plan (10 years). However, cabin site policy suggests that cabin site lease areas would revert to public uses when public need for the sites arose, and that cabin sites be reappraised and lease fees potentially raised by 1997.

The eventual removal of cabin leases would negate a substantial source of state revenue for operation of Canyon Ferry, depending on whether or not future uses for the sites generated revenues. Alternative B would maintain the status quo; cabin sites would be assumed to remain under private lease for an indefinite period and associated revenues would accrue at current levels. Under Alternative A, while leases were maintained and if fees were raised, increased funds would be available for state operations conducted at Canyon Ferry.

Employment. DFWP maintained 11.59 full-time equivalent (FTE) positions directly related to Canyon Ferry in 1990. Reclamation maintains between 18 and 21 FTEs for the total operation of the Canyon Ferry Project. Of these, 2.31 are directly related to park management. Private employment directly related to Canyon Ferry is accounted for in the jobs benefits figures listed under *Current Economic Impact*, above.

Employment projections developed by DFWP, BLM, and Reclamation staff for implementation of a possible management partnership were used for purposes of this analysis for Alternative A. BLM would fill 12.5 FTEs, DFWP would maintain 6.75 FTEs, and Reclamation 2.2 FTEs for a total of 21.5 FTEs. This would boost employment by 7.6 over current positions at Canyon Ferry. Alternative B is assumed to hold employment at current levels over the planning period.

Indirect employment associated with tourism, services, and supplies would be beneficially impacted by Alternative A to a greater degree, due to increased capital investment.

Fiscal Analysis. Canyon Ferry has generated only 50 percent of necessary revenues for park operation over the last decade. Revenues for operation currently come from a variety of sources including entrance and camping fees, other miscellaneous charges, cabin site leases and concessions fees. Cabin site fees have provided the majority (52.9 percent in FY 90) of Parks Division budget for Canyon Ferry. Reclamation makes capital contributions for health, safety and recreation development costs and weed control related to Canyon Ferry.

In 1990, DFWP estimated immediate capital needs at Canyon Ferry at \$3 million with an accompanying need for an additional \$150,000 to \$200,000 in annual operation budgets to maintain the new facilities. Anticipated revenues are expected to continue to fall well short of expenditures. The prolonged shortfall of revenue combined with the unlikelihood of a state source of funding has prompted the state to remove itself from Canyon Ferry parks management by September 1993.

Boosting cabin site lease fees, initiating promotional programs, maintaining a good quality fishery, diversifying attractions, and increasing enforcement on fee collection are all advocated within the action alternative. (Entrance and camping fee structure could change subject to the outcome of the management partnership.) Therefore, Alternative A is assumed to have a beneficial impact on revenue generation. Alternative B would not necessarily implement any of these objectives and therefore would have a neutral effect on revenue.

Expenditures would increase by about \$200,000 annually for operations and maintenance and by about \$1.4 million annually for five years for Alternative A. A capital improvements program and its subsequent update is also proposed to allow for planning and budgeting in an orderly fashion.

Under Alternative B, the management agency would continue to subsidize the park by at least 50 percent of needed revenues (could actually be higher since cabin site fees could continue to be collected by DFWP) and capital improvements would continue to be conducted as funds allowed and without benefit of a consistent program.

A great number of comments were received during public meetings on the management plan about dissatisfaction with the fee system. State policy is to collect fees at all state park sites during all seasons. Fee structures for entrance and camping would be subject to the guidelines of the ultimate management agency(cies).

Public Services. Public services are provided by a variety of public agencies -- federal, state, local, and private. Alternative A would all improve or mitigate existing public service provision so few impacts are expected. For example, mosquito control currently involves the use of pesticides; Alternative A advocates for an environmental review of control measures to assess environmental impacts. Some residual impacts may continue to occur from pesticide use. Road improvements and increased maintenance, conducting a communications evaluation, providing additional RV dump stations and potable water, continued monitoring of toxic algae blooms to protect public health and safety, and water safety enforcement are all proposed.

Alternative B would maintain a level of service provision similar to that which exists. Potential impacts could result to public health and safety from a lack services proposed above. The lack of emergency communication systems could be significant.

4.11 Land Use and Ownership

Land within the study area is primarily in recreational open space/conservation uses. The exceptions to this are the commercial concessions sites, the cabin lease site, the offices and

residential buildings at Canyon Ferry Village, and incidental buildings associated with area management (see figures 9 and 10 in the RMP).

The Federal Emergency Management Agency has mapped flood hazard boundaries for two tributaries to the reservoir; the Missouri River and Duck Creek. Other tributaries to Canyon Ferry may flood but have not been mapped. Development within floodplains is restricted by federal law, administered by county government.

Alternatives A would maintain existing categories of land use but would expand wildlife management areas and recreation sites. Alternative A would mitigate the effects of development by landscaping, placement of improvements in relation to adjacent uses, working with adjacent land managers, and by a variety of buffers. This alternative does not advocate for expansion of commercial uses on study area lands with the exception of a possible marina at the south end of the lake.

Conflicts between area users would be mitigated by formulating a Canyon Ferry Village plan; inventorying landscaping needs and providing landscaping and buffers; better designation of uses through signing, visitor information centers, and brochures; and increased enforcement.

As development occurs on adjacent private properties, conflicts between uses and increased trespass may occur. This is mitigated to a certain extent by proposed boundary fencing and buffers, but certain conflicts, such as shared recreational and residential traffic on local roads and recreationist and resident safety during hunting season, may be unavoidable. The need for expansion of Canyon Ferry airport would be examined in light of this plan.

Alternative B would prolong conflicts between area users, increase the difficulty of management as the area grows due to a lack of use designation, enforcement, fencing and buffers. The expansion of Canyon Ferry airport would be examined exclusive of any plan.

Cabin sites. Alternative A articulates Reclamation's positions on the status of leases, seasonal use, offsite development, permits for encroachments, trespass, submersible pumps, and on- and off-site improvements. These policies address on-going issues that have plagued the cabin sites lessees and management agencies for decades. Alternative B would maintain the status quo, a situation that prolongs the uncertainty of the fate of the cabin sites and provides inconsistent enforcement of permits and a lack of standards for development.

Cabin site lessees who have advocated for transfer of the cabin sites to private ownership will be disappointed by the plan's policy to terminate leases as public need for the cabin site areas arises. The public may benefit from increased use of the shoreline near the cabin sites; areas that currently appear to be private property. A secondary beneficial impact both to the cabin site lessees and to the general public from enforcement of visual and building standards will be an improvement in the appearance of cabin and recreation sites from both land and water.

Fencing. Boundary and internal fencing would take place under alternative A to curtail trespass within, and to and from adjacent properties. Alternative B would prolong cattle and vehicular trespass onto study area lands, with secondary impacts of weed distribution and habitat degradation.

4.12 Recreation

Canyon Ferry State Park offers the full breadth of water-related recreation opportunities, from sailing and sailboarding to fishing, motorboating, and swimming. Camping, picnicking, and passive forms of enjoyment such as wildlife-watching are available here. Hunters are attracted by both waterfowl and upland game birds, and big game animals. There are currently 24 recreation sites within the study area (see Figure 12 in the RMP). Even with all of these activities, much of the area's recreation potential remains untapped.

Canyon Ferry is about equidistant from Yellowstone and Glacier parks; about 3.5 hours driving time, respectively. Because it lies within the travel corridor between Montana's two primary tourist attractions, it has the potential for expansion as a recreational attraction. Canyon Ferry is one in a series of three reservoirs on the Missouri. The others, directly north, are Hauser and Holter reservoirs. Canyon Ferry is distinct from the other two in that it is surrounded by public lands and offers far more public recreational access. Canyon Ferry State Park is the only facility of its size and breadth of activity within the region identified under Socioeconomics. Spring Meadow Lake State Park in Helena offers water-based recreation on a much smaller scale and for day-users only.

One of the greatest difficulties faced by management agencies has been a lack of credible visitation data and a capacity analysis. Without these, the agencies are hamstrung in planning for future needs.

In order to conduct a usable capacity analysis at Canyon Ferry, an extensive amount of additional information is needed. Capacities are no longer based solely on physical space available but rather on a variety of natural resource conditions, institutional controls, and social preferences. Information needs include: a land survey of the camping and day-use areas and an inventory of the physical space available; a calculation of the number of spaces available based on national recreation standards; a resource inventory and use/damage evaluation; an assessment of visitor needs, preferences, and conflicts; and management goals and objectives.

In light of the lack of available information, an inventory of the current management practices and available facilities has been provided instead.

According to the park manager, public camping areas and day-use sites are rarely filled to the point that all available facilities are being used. (There are also concession-related camping facilities that are not covered here). The exception to this is on three peak holiday weekends; Memorial Day, Fourth of July, and Labor Day. At these peak times, visitation generally exceeds the developed spaces at all of the park campgrounds and spills over into undeveloped spaces. For instance, Silos has 24 developed spaces but has been known to handle up to 200 camping parties during high visitation (Tom Campbell, pers. comm., 4/11/91).

Historically, management has allowed overflow camping in undeveloped areas. The exception is at Court Sheriff/Ponderosa where the campground is closed when the designated campsites are filled.

Goose Bay, Confederate and Cottonwood are camping areas with no designated campsites. Therefore, their capacities are in addition to the above but difficult to estimate.

Day-use areas are limited by the number of available parking spaces. None of the day-use areas have land available for parking expansion with the possible exception of Crittendon. However, expanding parking here would be limited as well by sloping terrain and associated grading costs. At peak visitation times, parking at the day-use areas flows over onto West Shore Road. Although this is not a desirable situation from a safety standpoint, it is tolerated since it occurs fairly infrequently, such as during special group events.

The greatest public support was voiced for Alternative A. This alternative is assumed, therefore, to satisfy the highest number of recreation users.

Alternative A proposes that collection and analysis of visitation data begin immediately and that a capacity analysis be prepared. In the interim, or if Alternative B is chosen, impacts from overflow camping and day use would occur periodically and increasingly as use rises. Secondary impacts to natural resources would occur as would potential conflicts between users. Both alternatives allow "pioneer camping", a category of use that may sustain resource damage over time, and that may require greater administrative and site costs than designated, improved camping areas.

Alternative A proposes substantial improvement of 13 recreation sites and minor improvements within the remainder. New development would occur at Scooter Bay and Spring Creek Bay. Trails emphasizing handicapped-access and wildlife interpretation would be built at Canton Road and Ray Creek. The Missouri River nature trail, and two extensive hiking trails along the east and west shores would be developed (see Figure 2). Disturbed acreage associated with existing recreational development totals about 286 acres. Site disturbance from improvement of new recreation sites and trails is estimated to total about 90 acres.

All off-road vehicle (ORV) use would be eliminated on Reclamation lands except on area roads or on the frozen reservoir during winter. Designation of an ORV area was considered under Alternative A but rejected because of substantial impacts to highly-erodible soils, vegetation, wildlife, and water quality. As a mitigation, management agencies have committed to working with ORV user groups to designate an ORV area on nearby public lands. An ORV use area on Reclamation lands would be considered only if this effort failed and if an area could be found on Reclamation lands that would sustain only minimal environmental impacts.

Although exact costs cannot be formulated for the alternatives given the conceptual nature of site planning, Alternative A would cost approximately \$400,000 in annual operations and maintenance and \$1.4 million in capital improvements annually for at least 5 years. Assuming existing levels of expenditure, Alternative B would cost about \$250,000 annually in operations and management, and minimal capital expenditures. If federal funding for implementation is not forthcoming or if a reduced amount of funding is provided instead, revised operations and maintenance costs will have to be factored into management agency budgets to assure the long-term maintenance of capital improvements.

Alternative A proposes to encourage greater visitation by a promotional program, offering a greater variety of activities, and improving the quality of facilities at the reservoir. Visitation projections between alternatives would be purely speculative and therefore are not offered here. However, a wide variety of factors will influence visitation, with or without a management plan.

One of the primary factors is the quality of the fishery. 1992 offered up the highest gill net catch since 1986, when gill-netting was initiated. Further, 1992 surveys indicate that spring stocking efforts were very successful. Though there are no guarantees that this will become a consistent improvement, if it does, visitation will likely increase regardless of proposed recreation policies.

4.13 Transportation

Many of the area roads subject users to safety hazards due to narrow, winding surfaces and a lack of pavement. Road maintenance has been a lingering concern for year-round users of the area, in particular cabin site lessees. Pedestrian and bicycle safety is of concern since few trails and off-road facilities are provided for this use. Disabled-accessible facilities are limited, especially on the south end of the lake. Information about access points, and directional signing is inconsistent around the reservoir and lacks an easily-recognizable identity.

Alternative A would improve area safety and accessibility by improvements to East and West Shore roads, the access road to White Earth, chip/sealing of area roads, improved road maintenance, signing, additional off-road trails, and a travel plan for the study area. Costs associated with this alternative are about \$4.2 million.

Alternative B would have neither the associated costs nor benefits. Safety, access, and maintenance problems would remain and increase over time as use of the area increased and roads deteriorated.

Secondary impacts from both alternatives would be increased traffic on roads accessing the study area; primarily Canyon Ferry Road and Highway 284 (see Figure 13 in the RMP). Alternative A would have relatively greater secondary impacts than Alternative B since visitation is assumed to be higher. While none of the primary access roads is nearing capacity, they could sustain the need for increased maintenance.

4.14 Cultural Resources

Canyon Ferry has a rich history that has gone without widespread public recognition. Many historic cultural resources have not been recorded and evaluated. Most archeological cultural resources have yet to be evaluated, and artifact collecting has been an on-going problem due to lack of awareness and enforcement.

Alternative A would address gaps in knowledge of the history and prehistory of the area. The management plan would establish a program where National Historic Preservation Act compliance is systematic, Archeological Resources Protection Act is enforced, and c) interpretive displays would be developed and installed. Additional inventory would be systematically

completed and sites not previously recorded will be documented. All sites at Canyon Ferry would be evaluated for eligibility to the National Register of Historic Places. A Cultural Resources Management Plan will be devised for the short- and long-term management of the cultural resources. This cultural management plan shall contain a program for treatment of discoveries and human remains.

Alternative B would perpetuate the present level and kind of cultural resource management. Under this alternative, site inventory and evaluation would be on a reactionary basis only; that is, when projects are to impact sites. Previously recorded sites would remain unevaluated, unless affected by a project. There would be no Archeological Resource Protection Act enforcement. Vandalism would likely continue. Public interpretation and involvement would be minimal.

Environmental assessments would be prepared for site development to ensure that cultural and historic resources were protected and State Historic Preservation Office clearance would be required prior to any future development under both alternatives.

4.15 Noise

Noise conflicts have occurred primarily on the north shore around the busier bays that are confined by steeper topography.

The action alternative would address noise conflicts at Magpie and Cave bays by establishing a noise working group. Areawide noise impacts would be expected to increase unavoidably with increased use of the reservoir. If an ORV use area was designated as a result of working with ORV groups, increased noise impacts would result.

Alternative B would maintain the conflict between area users over noise at the north end and ORV trespass would continue to contribute to noise levels in the study area. Noise levels would increase over time with rising visitation but to a lesser degree than Alternative A.

4.16 Visual Resources

Natural visual qualities have suffered from unregulated human activities around the reservoir. Erosion, structural additions to the shoreline and cabin sites, a lack of vegetation and buffering around the recreation sites, and the potential for timber harvest and development on adjacent private property have, or have the potential to, impact visual resources around the reservoir.

Alternative A proposes to mitigate and protect visual quality by establishing building and visual standards and accompanying permits, by landscaping and providing visual buffers internal to recreation sites and between differing uses, and by participating in timber harvest planning with the USFS to protect scenic qualities around the reservoir.

Alternative B would amplify visual impacts; no programs or mitigations would occur and visual resource impacts from trespass vehicle damage would continue.

4.17 Cumulative and Irreversible and Irretrievable Impacts

It is assumed that both of the alternatives would eventually result in an increase in use at Canyon Ferry although the action alternative would probably achieve a higher increase in use at earlier dates. Therefore, cumulative traffic impacts would occur from increased recreation and surrounding suburban traffic on local area roads.

Alternative A would have positive cumulative benefits due to protection from design, increased staffing, and buffering. Some unavoidable cumulative effects on wildlife, soils, water quality, vegetation, esthetics, and the noise environment would occur under both of the alternatives within the study area from recreation site and trail development. These however, have been minimized by policies and programs, and would be mitigated further during final site design and environmental review.

Cumulative economic benefits would accrue to the local area along with other economic growth to a greater or lesser degree under both alternatives.

Irreversible and irretrievable commitments of land use and natural resources would be made by the action alternative. Alternative B could have irretrievable and irreversible impacts on cultural resources due to a lack of resource protection.

5. CONSULTATION AND COORDINATION

5.1 Agencies

The following agencies and groups were contacted for information necessary to prepare the resource management plan. Copies of this EA are being sent, if requested, for review and comment to the following:

U.S. Fish and Wildlife Service

Lewis and Clark County Commission

Broadwater County Commission

U.S. Bureau of Reclamation

U.S. Forest Service, Helena National Forest

U.S. Bureau of Land Management

Montana State Historic Preservation Office

Lewis and Clark County Health Department

Broadwater County Health Department

Montana Department of Fish, Wildlife and Parks

Montana Department of State Lands

Montana Department of Health and Environmental Sciences, Water Quality Bureau

Montana Department of Transportation

U.S. Soil Conservation Service

U.S. Geological Survey

Canyon Ferry Limnological Institute

National Weather Service

5.2 Public Involvement

During the development of the draft resource management plan, the consultant, Joel A. Shouse Consulting Services, conducted eight public meetings and numerous Master Advisory Committee Meetings to obtain public comments on, and contributions to, the plan. Public review of the draft plan and this EA will provide additional opportunities for consultation and coordination.

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The following individuals have been notified that the draft Canyon Ferry Resource Management Plan and Environmental Assessment are available for public review:

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APPENDIX A

Vegetation Species List

Non-flowering vascular plants

Equisetum arvense L. ("Field Horsetail")
Equisetum laevigatum A. Br. ("Smooth Scouring-rush")

Flowering plants

MAGNOLIATAE = Dicotyledonae ("Dicots")

Amaranthaceae ("Pigweed Family")
Amaranthus hybridus L. ("Green Pigweed")

Anacardiaceae ("Sumac Family")
Rhus trilobata Nutt. ("Skunkhush Sumac")

Apiaceae (= Umbelliferae) ("Carrot Family")
Conium maculatum L. ("Poison-hemlock")
Pastinaca sativa L. ("Wild Parsnip")
Sium suave Walt.

Asclepiadaceae ("Milkweed Family")
Asclepias speciosa Torr. ("Showy Milkweed")

Asteraceae (= Compositae) ("Composite Family")
Achillea millefolium L. ("Yarrow")
Antennaria rosea (Eat.) Greene ("Pink Pussytoes")
Arctium lappa L. ("Great Burdock")
Artemisia campestris L. ("Field Sagewort")
Artemisia cana Nutt. ("Silver Sagebrush")
Artemisia dracunculus L. ("False-tarragon Sagewort")
Artemisia frigida Willd. ("Fringed Sagewort")
Artemisia ludoviciana Nutt. ("Cudweed Sagewort")
Artemisia tridentata Nutt. ("Big Sagebrush")
Aster campestris Nutt. ("Field Aster")
Aster chilensis Nees. ("Creeping Aster")
Aster foliaceus Lindl. ("Leafybract-Aster")
Aster occidentalis (Nutt.) T. & G. ("Western Aster")
Bidens cernua L. ("Nodding Beggar's-tick")
Centaurea maculosa Lam. ("Spotted Knapweed")
Chrysopsis villosa (Pursh) Nutt. ("Hairy Golden-aster")
Chrysothamnus nauseosus (Pall.) Britt. ("Rubber Rabbitbrush")
Chrysothamnus viscidiflorus (Hook.) Nutt. ("Green Rabbitbrush")
Cirsium arvense (L.) Scop. ("Canada Thistle")
Cirsium flodmani (Rydb.) Arthru ("Flodman's Thistle")
Cirsium vulgare Sav. ("Bull Thistle")
Erigeron canadensis L. ("Horseweed Fleabane")
Erigeron glabellus Nutt. ("Smooth Fleabane")

Gnaphalium palustre Nutt. ("Marsh Cudweed")
Grindelia squarrosa (Pursh) Dunal. ("Curlycup Gumweed")
Helenium autumnale L. ("Common Sneezeweed")
Helianthus annuus L. ("Common Sunflower")
Helianthus nuttallii T. & G. ("Nuttall's Sunflower")
Hymenoxys richardsonii (Hook.) Cock. ("Richardson's Rubberweed")
Iva axillaris Pursh ("Poverty Weed")
Iva xanthifolia Nutt. ("Marsh-elder")
Lactuca pulchella (Pursh) DC. ("Blue-lettuce")
Lactuca serriola L. ("Prickly-lettuce")
Liatriis punctata Hook. ("Dotted Blazingstar")
Ratibida columnifera (Nutt.) Woot. & S. ("Prairie Coneflower")
Rudbeckia laciniata L. ("Cutleaved Coneflower")
Senecio serra Hook. ("Sawtoothed Groundsel")
Solidago canadensis L. ("Canadian Goldenrod")
Solidago gigantea Ait. ("Giant Goldenrod")
Solidago missouriensis
Solidago occidentalis
Sonchus asper (L.) Hill ("Spiny Sowthistle")
Tanacetum vulgare L. ("Common Tansy")
Taraxacum officinale Weber ("Common Dandelion")
Tragopogon dubius Scop. ("Common Salsify")
Xanthium strumarium L. ("Cocklebur")

Balsaminaceae ("Touch-me-not Family")

Impatiens ecalcarata Blankenship ("Ecalcarate Touch-me-not")

Boraginaceae ("Borage Family")

Cynoglossum officinale L. ("Hound's-tongue")
Lappula redowskii (Hornem.) Greene ("Western Sticktight")

Brassicaceae (=Cruciferae) ("Mustard Family")

Alyssum desertorum Stapf. ("Dryland Alyssum")
Berteroa incana (L.) DC. ("Hoary False-alyssum")
Brassica juncea (L.) Cosson. ("India-mustard")
Camelina microcarpa Andr. ("Littlepod Falseflax")
Capsella bursa-pastoris (L.) Medic. ("Shepherd's Purse")
Cardaria pubescens (Mey.) Rollins ("Hairy Whitetop")
Descurainia richardsonii (Sweet) Schult. ("Richardson's Tansymustard")
Lepidium densiflorum Schrad. ("Prairie Pepperweed")
Lesquerella ludoviciana (Nutt.) Wats. ("Silvery Bladderpod")
Rorippa islandica (Oeder) Barbas. ("Island Watercress")
Rorippa nasturtium-aquaticum (L.) Schinz & Thell. ("Watercress")
Sisymbrium altissimum (L.) Britt. ("Jim Hill Thumblemustard")
Sisymbrium loeselii L. ("Smallpod Thumblemustard")
Thlaspi arvense L. ("Fanweed")

Cactaceae ("Cactus Family")

Mamillaria missouriensis Sweet. ("Yellow Pincushion-cactus")

Mamillaria vivipara (Nutt.) Haw. ("Pink Pincushion cactus")

Opuntia pollyacantha Haw. ("Plains Pricklypear-cactus")

Capparaceae (=Capparidaceae) ("Caper Family")

Cleome serrulata Pursh ("Rocky Mt. Bee Plant")

Caprifoliaceae ("Honeysuckle Family")

Symphoricarpos occidentalis Hook. ("Western Snowberry")

Chenopodiaceae ("Goosefoot Family")

Atriplex hortensis L. ("Garden Orach")

Chenopodium album L. ("Lamb's Quarters")

Chenopodium glaucum L. ("Oakleaved Goosefoot")

Chenopodium hybridum ("Mapleleaf Goosefoot")

Eurotia lanata (Pursh) Mog. ("Winterfat")

Kochia scoparia (L.) Schrad. ("Summer-cypress")

Salsola kali L. ("Russian Thistle")

Sarcobatus vermiculatus (Hook.) Torr. ("Greasewood")

Suaeda depressa Pursh ("Pursh's Seepweed")

Convolvulaceae ("Morning-glory Family")

Convolvulus arvensis L. ("Field Bindweed")

Convolvulus sepium L. ("Large Bindweed")

Elaeagnaceae ("Oleaster Family")

Elaeagnus commutata Bernh. ("Silver-berry") ("Russian Olive")

Shepherdia argentea Nutt. ("Buffalo-berry")

Euphorbiaceae ("Spurge Family")

Euphorbia esula L. ("Leafy Spurge")

Fabaceae (=Leguminosae) ("Pea Family")

Astragalus bisulcatus (Hook.) Gray ("Two-grooved Milkvetch")

Astragalus cicer L. ("Cicer's Milkvetch")

Astragalus canadensis L. ("Canadian Milkvetch")

Astragalus dasyglottis Fisch. ("Purple Milkvetch")

Glycyrrhiza lepidota (Nutt.) Pursh ("Wild Licorice")

Lathyrus latifolius L. ("Everlasting Sweetpea")

Medicago lupulina L. ("Black Medic")

Medicago sativa L. ("Alfalfa")

Melilotus alba Desv. ("White Sweetclover")

Melilotus officinalis (L.) Lam. ("Yellow Sweetclover")

Oxytropis riparia Litr. ("Ruby Valley Pointvetch")

Pisum sativum L. ("Garden Pea")

Thermopsis montana Nutt. ("Mountain Yellow-pea")

Trifolium fragiferum L. ("Strawberry Clover")

Trifolium hybridum L. ("Alsike Clover")

Trifolium pratense L. ("Red Clover")

Vicia americana Muhl. ("American Vetch")

Gentianaceae ("Gentian Family")

Gentiana affinis Gris. ("Rocky Mountain Pleated Gentian")

Grossulariaceae ("Gooseberry Family")

Ribes affinis Lindl. ("Redshoot Gooseberry")

Haloragidaceae ("Water-milfoil Family")

Myriophyllum exalbescens Fern ("American Milfoil")

Lamiaceae (=Labiatae) ("Mint Family")

Dracocephalum nuttallii Britt. ("Nuttall's Dragonhead")

Lycopus asper Greene ("Western Water-horehound")

Mentha arvensis L. ("Field Mint")

Nepeta cataria L. ("Catnip")

Salvia sylvestris L. ("Woodland Salvia")

Scutellaria galericulata L. ("Marsh Skullcap")

Stachys palustris L. ("Marsh Hedgenettle")

Lemnaceae (Duckweed Family)

Lemna minor ("Common Duckweed")

Spirodela polyrhiza ("Greater Duckweed")

Linaceae ("Flax Family")

Linum rigidum Pursh ("Stiffstem Flax")

Linum usitatissimum L. ("Flax")

Loasaceae ("Blazingstar Family")

Mentzelia laevicaulis (Dougl.) ("Fivepetal Blazingstar")

Malvaceae ("Mallow Family")

Sphaeralcea coccinea (Pursh) Rydb. ("Scarlet Globemallow")

Nyctaginaceae ("Four-o'clock Family")

Mirabilis linearis (Pursh) Heim. ("Narrow-leaved Four-o'clock")

Onagraceae ("Evening Primrose Family")

Epilobium angustifolium L. ("Fireweed")

Epilobium glandulosum Lehm. ("Glandular Willow-herb")

Epilobium paniculatum ("Panicked Willow-herb")

Gaura coccinea Pursh ("Scarlet Gaura")

Oenothera biennis L. ("Rydberg's Evening Primrose")

Plantaginaceae ("plantain Family")

- Plantago major L. ("Broadleaved Plantain")
- Plantago patagonica Jacq. ("Woolly Plantain")

Polemoniaceae ("Phlox Family")

- Collomia linearis Nutt. ("Narrow-leaved Collomia")

Polygonaceae ("Buckwheat Family")

- Eriogonum strictum
- Polygonum aviculare L. ("Prostrate Knotweed")
- Polygonum erectum L. ("Erect Knotweed")
- Polygonum lapathifolium L. ("Willow-leaved Smartweed")
- Polygonum amphibium L. ("Water Smartweed")
- Polygonum coquimbense Muhl. ("Colored Smartweed")
- Rumex crispus L. ("Curley Dock")
- Rumex maritimus ("Bristle Dock")
- Rumex occidentalis Wats. ("Western Dock")
- Rumex salicifolius Weinm. ("Mexican Dock")

Portulacaceae ("Purslane Family")

- Portulaca oleracea L. ("Purslane")

Primulaceae ("Primrose Family")

- Steironema ciliatum (L.) Raf. ("Fringed Loosestrife")

Ranunculaceae ("Buttercup Family")

- Clematis ligusticifolia Nutt. ("Western White Clematis")
- Ranunculus acris L. ("Tall Buttercup")
- Ranunculus aquatilis L. ("Water-Buttercup")
- Ranunculus cymbalaria Pursh ("Shore-Buttercup")
- Ranunculus repens L. ("Creeping Buttercup")
- Ranunculus sceleratus L. ("Celery-leaved Buttercup")
- Thalictrum venulosum Trel. ("Veiny Meadow-rue")

Rosaceae ("Rose Family")

- Geum macrophyllum Willd. ("Largeleaved Avens")
- Potentilla anserina L. ("Silverweed Ciniquefoil")
- Rosa woodsii ("Woods Rose")

Rubiaceae ("Madder Family")

- Galium trifidum L. ("Three-parted Bedstraw")

Salicaceae ("Willow Family")

- Populus angustifolia James ("Narrow-leaved Cottonwood")
- Populus tremuloides Michx. ("Quaking Aspen")
- Salix alba ("White Willow")
- Salix amygdaloides Anders. ("Peachleaved Willow")

Salix bebbiana ("Bebb Willow")
Salix fluviatilis Nutt. ("Slender willow")

Scrophulariaceae ("Figwort Family")

Orthocarpus luteus Nutt. ("Yellow Owl-clover")
Verbascum thapsus L. ("Flannel Mullein")
Veronica americana Schwein. ("American Speedwell")
Veronica peregrina L. ("Purslane Speedwell")

Solanaceae ("Potato Family")

Hyoscyamus niger L. ("Henbane")
Solanum dulcamara L. ("Climbing Nightshade")
Solanum triflorum Nutt. ("Cut-leaved Nightshade")

Urticaceae ("Nettle Family")

Parietaria pennsylvanica Muhl. ("Pennsylvania Pellitory")
Urtica dioica L. ("Stinging Nettle")

Verbenaceae ("Verbena Family")

Verbena bracteata L. & R. ("Bracted Verbena")
Verbena hastata L. ("Swamp Vervena")

LILIATAE = Monocotyledonae ("Monocots")

Alismataceae ("Water-Plantain Family")

Sagittaria latifolia Willd. ("Common Arrow-leaf")

Cyperaceae ("Sedge Family")

Carex aurea Nutt. ("Golden Sedge")
Carex athrustachy
Carex douglasii Boott. ("Douglas's Sedge")
Carex lanuginosa ("Woolly Sedge")
Carex hystricina Muhl. ("Porcupine Sedge")
Carex laeviconica Dewey ("Smooth-fruited Sedge")
Carex nebraskensis Dewey ("Nebraska Sedge")
Carex praegracilis W. Boott. ("Clustered Field-Sedge")
Carex eleocharis Bailey ("Needle-leaved Sedge")
Cyperus aristatus Rottb. ("Bearded Flat-sedge")
Eleocharis apauciflora (Lightf.) Link ("Few-flowered Spike-sedge")
Eleocharis palustris ("Marsh Spike-sedge")
Scirpus americanus ("American Bulrush")
Scirpus microcarpus Presl ("Small-fruited Bulrush")
Scirpus paludosus A. Nels. ("Alkali Bulrush")
Scirpus validus ("Great Bulrush")

Iridaceae ("Iris Family")

Iris missouriensis Nutt. ("Rocky Mountain Iris")

Juncaceae ("Rush Family")

- Juncus balticus Willd. ("Wire-Rush")
- Juncus confusus Coville ("Mixed-up Rush")
- Juncus longistylis Torr. ("Longnosed Rush")
- Juncus torreyi (Coville) ("Torrey's Rush")

Juncaginaceae ("Arrowgrass Family")

- Triglochin maritima L. ("Shore Arrowgrass")

Liliaceae ("Lily Family")

- Allium textile Nels. & Macbr. ("Woven-bulb Onion")
- Asparagus officinalis L. ("Asparagus")
- Smilacina stellata ("False Solomon's Seal")

Poaceae (=Gramineae) ("Grass Family")

- Agropyron cristatum (L.) Gaertn. ("Crested Wheatgrass")
- Agropyron elongatum Host ("Tall Wheatgrass")
- Agropyron repens (L.) Beauv. ("Quackgrass")
- Agropyron smithii Rydb. ("Western Wheatgrass")
- Agropyron trachycaulum (Link) Malte ("Slender Wheatgrass")
- Agrostis alba L. ("Redtop")
- Agrostis palustris Huds. ("Creeping Marsh Bentgrass")
- Agrostis scabra Willd. ("Rough Bentgrass")
- Agrostis tenuis Sibth. ("Colonial Bentgrass")
- Alopecurus aequalis Sobol. ("Stream Foxtail")
- Beckmannia syzigachne (Steud.) Fern. ("American Sloughgrass")
- Bouteloua gracilis (H.B.K.) Lag. ("Blue gramagrass")
- Bromus ciliatus L. ("Fringed Bromeagrass")
- Bromus inermis Leyss. ("Smooth Bromeagrass")
- Bromus japonicus Thunb. ("Japanese Bromeagrass")
- Bromus tectorum L. ("Cheat Bromeagrass")
- Calamagrostis inexpansa A. Gray ("Northern Reedgrass")
- Dactylis glomerata L. ("Orchardgrass")
- Distichlis stricta (Torr.) Rydb. ("Inland Saltgrass")
- Echinochloa crusgalli (L.) Beauv. ("Common Barnyardgrass")
- Elymus cinereus Scribn. & Merr. ("Basin Wildrye")
- Elymus glaucus Buckl. ("Blue Wildrye")
- Elymus junceus Fish. ("Russian Wildrye")
- Festuca pratensis Huds. ("Meadow Fescue")
- Hierochloa odorata (L.) Beauv. ("Common Sweetgrass")
- Hordeum jubatum L. ("Foxtail Barley")
- Hordeum vulgare L. ("Sixrowed Barley")
- Muhlenbergia asperifolia (Nees. & Mey.) Parodi ("Alkali Muhly")
- Muhlenbergia richardsonis (Trin.) Rydb. ("Mat Muhly")
- Oryzopsis hymenoides (R. & S.) Ricker ("Indian Ricegrass")
- Phalaris arundinacea L. ("Reed Canarygrass")
- Phleum pratensis ("Timothy")

Phragmites communis Trin. ("Common Reed")
Poa compressa L. ("Canadian Bluegrass")
Poa nemoralis L. ("Woods Bluegrass")
Poa pratensis L. ("Kentucky Bluegrass")
Poa secunda Presl ("Sandberg's Bluegrass")
Poa trivialis L. ("Rough Bluegrass")
Polypogon monspeliensis (L.) ("Rough Bluegrass")
Puccinellia nuttalliana (Schult.) A.S. Hitch. ("Nuttall's Alkaligrass")
Setaria viridis (L.) Beauv. ("Green bristlegrass")
Sitanion hystrix (Nutt.) J.G. Smith ("Squirreltail")
Spartina pectinata Link ("Prairie Cordgrass")
Stipa comata Trin. & Rupr. ("Needle-and-Thread Grass")
Stipa viridula Trin ("Green Needlegrass")

Potamogetonaceae ("Pondweed Family")

Potamogeton filiformis ("Slender Pondweed")
Potamogeton pectinatus L. ("Sago Pondweed")

Sparganiaceae ("Bur-reed Family")

Sparganium eurycarpum Engelm. ("Broad-fruited Bur-reed")

Typhaceae ("Cattail Family")

Typha latifolia L. ("Common Cattail")

APPENDIX B

Wildlife Species List
and
Correspondence with US Fish and Wildlife Service

Table 1. The following species list is based on Montana distribution information (Thompson 1982) using the latilong system. A list of species known to occur within a 1 degree latitude by 1 degree longitude quadrant, of which Canyon Ferry Reservoir is part, was reduced to species which use habitats similar to Canyon Ferry Reservoir's immediate surroundings. The list therefore includes species known to occur as well as potential occurrences and may not be complete.

AMPHIBIANS

Long-toed Salamander (Ambystoma macrodactylum)

Boreal (Western) Toad (Bufo boreas)

Leopard Frog (Rana pipiens)

REPTILES

Painted Turtle (Chrysemys picta)

Rubber Boa (Charoma bottae)

Plains Hognose (Heterodon nasicus)

Racer (Coluber constrictor)

Bullsnake (Pituophis melanoleucus)

Common Garter Snake (Thamnophis sirtalis)

Western Garter Snake (Thamnophis elegans)

Prairie Rattlesnake (Crotalus viridis)

MAMMALS

Masked Shrew (Sorex cinereus)

Long-legged Myotis (Myotis volans)

Long-eared Myotis (Myotis euotis)

White-tailed Jackrabbit (Lepus townsendii)

Yellow-pine Chipmunk (Eutamias amoenus)

Yellow-bellied Marmot (Marmota flaviventris)

Richardson's Ground Squirrel (Spermophilus richardsonii)

Red Squirrel (Tamiasciurus hudsonicus)

MAMMALS (Cont.)

Northern Pocket Squirrel (Thomomys talpoides)

Beaver (Castor canadensis)

Deer mouse (Peromyscus maniculatus)

Meadow Vole (Microtus pennsylvanicus)

Water Vole (Microtus richardsoni)

Sagebrush Vole (Lagurus curtatus)

Muskrat (Ondatra zibethicus)

Porcupine (Erethizon dorsatum)

Coyote (Canis latrans)

Red Fox (Vulpes vulpes)

Raccoon (Procyon lotor)

Ermine (Mustela erminea)

Least Weasel (Mustela nivalis)

Long-tailed Weasel (Mustela frenata)

Mink (Mustela vison)

Badger (Taxidea taxus)

Striped Skunk (Mephitis mephitis)

River Otter (Lutra canadensis)

Bobcat (Lynx rufus)

Elk (Cervus elaphus)

Mule Deer (Odocoileus hemionus)

White-tailed Deer (Odocoileus virginianus)

Moose (Alces alces)

Pronghorn (Antilocapra americana)

Table 2. The following is a list of mammals, reptiles, and amphibians known to inhabit Canyon Ferry Wildlife Management Area based on trapping and observation (Flath 1984).

| Species | Habitats* |
|------------------------------|-------------|
| Mammals: | |
| Masked shrew | 1,4,5,6 |
| Vagrant shrew | 1,4,5,6 |
| Mountain cottontail | 1 |
| Yellow pine chipmunk | 1 |
| Richardson's ground squirrel | 3 |
| Beaver | 7 |
| Western deer mouse | 2,3,4,5,6 |
| Red-backed vole | 4,5 |
| Meadow vole | 1,2,3,4,5,6 |
| Mountain vole | 4,5,6 |
| Muskrat | 7 |
| House mouse | 6 |
| Coyote | 1 |
| Red fox | 1,3 |
| Raccoon | 1 |
| Mink | 7 |
| Skunk | 1,6 |
| White-tailed deer | 1,9 |
| Reptiles: | |
| Painted turtle | 7 |
| Bullsnake | 3 |
| Common garter snake | 4 |
| Amphibians: | |
| Western toad | 7 |
| Leopard frog | 7 |

*Habitat code: 1. Willow and riparian; 2. Bunchgrass; 3. Upland grass; 4. Cottonwood; 5. Island; 6. Reed canary; 7. Open water; 8. Russian olive; 9. Cultivated

Flath, D. 1984. Statewide nongame wildlife survey and inventory. Unpubl. Job Prog. Rept., Montana Dept. Fish, Wildl. and Parks, Helena. 14 pp.

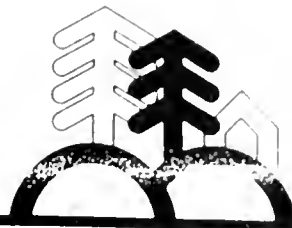
Thompson, L. S. 1982. Distribution of Montana amphibians, reptiles and mammals. The Montana Audubon Council. 24 pp.

TABLE 3.

The following is a list of birds known to inhabit Canyon Ferry Reservoir area based on observation (Rick Northrup, DFWP, personal communication, 1/20/93).

| | | |
|------------------------|------------------------|--------------------------|
| Common Loon | Red-breasted Merganser | Least Sandpiper |
| Western Grebe | Ruddy Duck | Baird's Sandpiper |
| Pied-billed Grebe | | Long-billed Dowitcher |
| Horned Grebe | Turkey Vulture | Marbled Godwit |
| Eared Grebe | | Wilson's Phalarope |
| | Osprey | Red-necked Phalarope |
| American White Pelican | | |
| | Bald Eagle | California Gull |
| Double-crested | Golden Eagle | Ring-billed Gull |
| Cormorant | Northern Harrier | Franklin's Gull |
| | Cooper's Hawk | Bonaparte's Gull |
| Great Blue Heron | Northern Goshawk | Caspian Tern |
| American Bittern | Swainson's Hawk | Common Tern |
| Black-crowned | Red-tailed Hawk | Black Tern |
| Night-heron | Ferruginous Hawk | |
| | Rough-legged Hawk | Rock Dove |
| White-faced Ibis | | Mourning Dove |
| | Peregrine Falcon | |
| Tundra Swan | Prairie Falcon | Black-billed Cuckoo |
| Trumpeter Swan | American Kestrel | |
| Canada Goose | Merlin | Great Horned Owl |
| Snow Goose | | Snowy Owl |
| Greater White-fronted | Ruffed Grouse | Long-eared Owl |
| Goose | Sharp-tailed Grouse | Short-eared Owl |
| Mallard | Ring-necked Pheasant | |
| Gadwall | Gray Partridge | Common Nighthawk |
| Northern Pintail | | |
| Green-winged Teal | Sandhill Crane | Belted Kingfisher |
| Blue-winged Teal | | |
| Cinnamon Teal | Sora | Yellow-bellied Sapsucker |
| American Wigeon | American Coot | Northern Flicker |
| Northern Shoveler | Black Bellied Plover | Hairy Woodpecker |
| Wood Duck | Snowy Plover | Downy Woodpecker |
| Redhead | Killdeer | |
| Ring-necked Duck | | Least Flycatcher |
| Canvasback | American Avocet | Eastern Kingbird |
| Lesser Scaup | | Western Kingbird |
| White-winged Scoter | Common Snipe | Say's Phoebe |
| Common Goldeneye | Long-billed Curlew | |
| Barrow's Goldeneye | Willet | Horned Lark |
| Bufflehead | Greater Yellowlegs | |
| Hooded Merganser | Lesser Yellowlegs | Violet-green Swallow |
| Common Merganser | Spotted Sandpiper | Tree Swallow |

| | |
|-------------------------------|-------------------------|
| Bank Swallow | Green-tailed Towhee |
| Northern Rough-winged Swallow | American Tree Sparrow |
| Barn Swallow | Chipping Sparrow |
| Cliff Swallow | Clay-colored Sparrow |
| | Vesper Sparrow |
| | Lark Sparrow |
| Black-billed Magpie | Lark Bunting |
| Common Raven | Savannah Sparrow |
| American Crow | Song Sparrow |
| Pinyon Jay | Dark-eyed Junco |
| | Bobolink |
| Black-capped Chickadee | Western Meadowlark |
| Mountain Chickadee | Yellow-headed Blackbird |
| White-breasted Nuthatch | Red-winged Blackbird |
| Red-breasted Nuthatch | Northern Oriole |
| | Brewer's Blackbird |
| Brown Creeper | Common Grackle |
| | Brown-headed Cowbird |
| House Wren | |
| Marsh Wren | Pine Grosbeak |
| | Evening Grosbeak |
| American Robin | Pine Siskin |
| Swainson's Thrush | American Goldfinch |
| Mountain Bluebird | Common Redpoll |
| Townsend's Solitaire | |
| Ruby-crowned Kinglet | |
| Gray Catbird | |
| Water Pipit | |
| Bohemian Waxwing | |
| Cedar Waxwing | |
| Northern Shrike | |
| Loggerhead Shrike | |
| European Starling | |
| Yellow Warbler | |
| Yellow-rumped Warbler | |
| Wilson's Warbler | |
| American Redstart | |
| Common Yellowthroat | |
| Western Tanager | |
| Black-headed Grosbeak | |
| Rufous-sided Towhee | |



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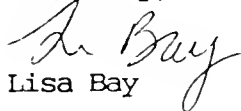
December 6, 1991

Dear Rob:

Joel Shouse and myself are contractors preparing a resource management plan and attendant environmental assessment for Canyon Ferry State Park. The following threatened and endangered wildlife species will be addressed in the document: the bald eagle and peregrine falcon. In addition, one species of special concern, the ferruginous hawk, is addressed.

I would appreciate a letter of concurrence from the U.S. Fish and Wildlife Service that these are the only species of this type in the study area, which encompasses the reservoir itself and surrounding Bureau of Reclamation lands.

Sincerely,


Lisa Bay

xerox: Joel Shouse
Rick Blaskovich
Jerry Wells



IN REPLY REFER TO

United States Department of the Interior

FISH AND WILDLIFE SERVICE

FISH AND WILDLIFE ENHANCEMENT
FEDERAL BUILDING, US COURTHOUSE
301 S PARK
P O BOX 10023
HELENA MT 59626



M.04 BR Canyon Ferry

December 23, 1991

Lisa Bay
Planning and Resource Management
31 Division
Helena, MT 59626

Dear Lisa,

This is in response to your December 6, 1991 letter requesting Fish and Wildlife Service (Service) verification of Federally listed endangered and threatened species that may occur in the Canyon Ferry reservoir area located in Lewis and Clark County, Montana.

The Service concurs with the species list provided in the above dated correspondence.

Please contact us by mail at the above-referenced letterhead address or call Rob Hazlewood at (406) 449-5225 or FTS 585-5225 if we can be of further assistance.

Sincerely,

Dale Harms
State Supervisor
Montana State Office

RMH/rmh

APPENDIX C

Fish Species List

Table 1.

Fish species present in the Canyon Ferry Reservoir/Missouri River system as of 1992.

Sucker Family

White sucker (Catostomus commersoni)
Longnose sucker (Catostomus catostomus)
Mountain sucker (Catostomus platyrhynchus)

Minnow Family

Common carp (Cyprinus carpio)
Utah chub (Gila atraria)
Flathead chub (Hybopsis gracilis)
Longnose dace (Rhinichthys cataractae)
Fathead minnow (Pimephales promelas)

Trout Family

Kokanee (Oncorhynchus nerka)
Rainbow trout (Oncorhynchus mykiss)
Cutthroat trout (Oncorhynchus clarki)
Brown trout (Salmo trutta)
Brook trout (Salvelinus fontinalis)
Mountain whitefish (Prosopium williamsoni)

Bullhead Catfish Family

Stonecat (Noturus flavus)

Codfish Family

Burbot (Lota lota)

Sunfish Family

Black crappie (Pomoxis nigromaculatus)
Largemouth Bass (Micropterus salmoides)

Sculpin Family

Mottled sculpin (Cottus bairdi)

Perch Family

Yellow perch (Perca flavescens)
Walleye (Stizostedion vitreum)

APPENDIX D

List of Commitments

ENVIRONMENTAL COMMITMENTS

1. Update Missouri River Advisory Council's guidelines and continue meetings.
2. Review agency policies to assure compliance with MEPA/NEPA.
3. Assess adequacy of cabin site lease fees and conduct reappraisal of cabin sites.
4. Prepare, publicize, and enforce cabin site building standards.
5. Formulate a mosquito control plan prior to pesticide application.
6. Formulate a Canyon Ferry Village Plan.
7. Determine the need for future commercial and Canyon Ferry airport expansions.
8. Work with ORV users to identify ORV use areas on nearby public lands.
9. Curtail trespass/ unauthorized vehicle use by a combination of methods.
10. Complete an inventory of historic, prehistoric, and paleontological resources.
11. Increase surveillance of sites and paleontological locales.
12. Develop compliance procedures so that resources are protected.
13. Comply with existing laws for cultural resources on all new projects.
14. Develop law enforcement procedures for ARPA violations.
15. Develop interpretive displays for cultural resources, provide tours.
16. Develop a cultural Resource Management Plan.
17. Establish a consistent visitation record for Canyon Ferry.
18. Prepare a capacity analysis.
19. Request that DHES-WQB design a water quality monitoring program.
20. Prepare a weed management plan.
21. Officially designate additional wildlife management areas.
22. Continue to identify and protect critical habitats as data are gathered.

23. Bury all powerlines or install powerlines in such a manner that prevents electrocution of raptors.

